



**Ukiah Valley Fire District Board of Directors  
Regular Meeting  
AGENDA**

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

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

To participate or view the virtual meeting, go to the following link: <https://us06web.zoom.us/j/87886371755>

Or you can call in using your telephone only:

- Call (toll free) 1 669 444 9171
- Enter the Access Code: 878 8637 1755
- 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](http://www.cityofukiah.com/meetings).

**April 14, 2026 - 5:15 PM**

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**1. CALL TO ORDER AND ROLL CALL**

**2. PLEDGE OF ALLEGIANCE**

**3. ANNOUNCEMENTS**

**4. PUBLIC COMMENT ON NON-AGENDA ITEMS**

The Ukiah Valley Fire District Board of Directors welcomes input from the audience. If there is a matter of business on the agenda that you are interested in, you may address the District Board 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 Ukiah Valley Fire District, 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.

**5. APPROVAL OF MINUTES**

5.a. Approval of the Minutes for the February 10, 2026, Regular Meeting.

***Recommended Action: Approve the minutes for the February 10, 2026, Regular Meeting.***

Attachments:

1. 2026-02-10 Draft Minutes

**6. UNFINISHED BUSINESS - DISCUSSION/ACTION**

**7. NEW BUSINESS - DISCUSSION/ACTION**

- 7.a. Approval of \$518,268.08 in Mitigation and Measure B Funds for a United States Department of Agriculture Disaster Grant Match for a 107-Foot Ladder Truck and Deferring Training Tower Project.

**Recommended Action: Approve \$123,588.00 in mitigation funds and \$394,680.08 in Measure B funds, totaling \$518,268.08, to meet the 25% local match requirement for a United States Department of Agriculture Community Facilities Disaster Grant for the purchase of a Pierce Enforcer 107-foot single rear axle ladder apparatus; and defer the Measure B-funded training tower project until a suitable site is secured and funding is available in the FY 2027–28 budget.**

Attachments:

1. Notice of Funding Opportunity #RUS-23-WATER-0009
2. GoldenStateQuote\_PierceQuint107LadderApparatus
3. Aerial DAS-6 Schematic
4. Specifications - Enforcer Ascendant 107' Ladder Quint
5. Ladder Truck City ASR

## 8. COMMUNICATIONS RECEIVED AND FILED - INFORMATION

## 9. DIRECTOR'S REPORT

## 10. CHIEFS REPORTS

- 10.a. Financial Report and Disbursements for February 1, 2026, through March 30, 2026.

**Recommended Action: Receive financial report and disbursements for February 1, 2026, through March 20, 2026.**

Attachments:

1. UVFA financial Report & disbursements

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

- 11.a. Conference with Labor Negotiator (54957.6)

Agency Designated Representative: Sage Sangiacomo, City Manager  
Employee Organizations: Ukiah Professional Firefighters Association

## 12. ADJOURNMENT

Please be advised that the Ukiah Valley Fire District complies with ADA requirements and 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. Materials related to an item on this Agenda submitted to the Ukiah Valley Fire District after distribution of the Agenda Packet, are available for public inspection at the front counter at the Ukiah Valley Fire District Office, 1500 South State Street, Ukiah, CA 95482, during normal business hours Monday through Friday, 8:00 am to 4:00 pm.

I hereby certify under penalty of perjury under the laws of the State of California that the foregoing agenda was posted at the following location: Ukiah Valley Fire District Office - 1500 South State Street; Ukiah, California; and online not less than 72 hours prior to the meeting set forth on this agenda. To view the meeting, click on the name of the meeting at: [www.cityofukiah.com/meetings](http://www.cityofukiah.com/meetings).

Araceli Sandoval, Deputy City Clerk

Dated: 04/10/2026



**UKIAH VALLEY FIRE DISTRICT BOARD OF DIRECTORS**

GREGORY CAVALIN – SCOTT CRATTY – KEVIN JENNINGS – MICHAEL GRAHAM – PETE BUSHBY

**REGULAR MEETING MINUTES**

**Civic Center Chamber**

**300 Seminary Avenue, Ukiah, CA 95482**

**Virtual Meeting Link: <https://us06web.zoom.us/j/87886371755>**

**February 10, 2026**

**5:15 P.M.**

**1. CALL TO ORDER and ROLL CALL**

The Ukiah Valley Fire District Board of Directors met at a Regular Meeting on February 10, 2026, having been legally noticed on February 6, 2026. The meeting was held in person and virtually at the following link: <https://us06web.zoom.us/j/87886371755>. President Bushby called the meeting to order at 5:15 P.M. with the following **Directors Present:** Gregory Cavalin, Scott Cratty, Michael Graham, Kevin Jennings, and Pete Bushby. **Staff Present:** Ryan Nelson, Battalion Chief; Traci Boyl, Ukiah Senior Management Analyst; Sage Sangiacomo, Ukiah City Manager; and Araceli Sandoval, Deputy Clerk of the Board.

*PRESIDENT BUSHBY PRESIDING.*

**2. PLEDGE OF ALLEGIANCE**

*The Pledge of Allegiance was led by Battalion Chief Nelson.*

**3. ANNOUNCEMENTS**

*No announcements were made.*

**4. PUBLIC COMMENT ON NON-AGENDA ITEMS**

**Public comment:** Richard Mack – developing a project within UVFD jurisdiction.

**5. APPROVAL OF MINUTES**

**a. Approval of the Minutes for the December 9, 2025, Regular Meeting.**

**Motion/Second:** Jennings/Cavalin to approve the Minutes for the December 9, 2025, a regular meeting, as submitted. Motion **carried** by the following roll call votes: AYES: Cavalin, Cratty, Graham, Jennings, and Bushby. NOES: None. ABSENT: None. ABSTAIN: None.

**6. UNFINISHED BUSINESS**

*No Unfinished Business items were placed on the agenda.*

**7. NEW BUSINESS**

*No New Business items were placed on the agenda.*

**8. COMMUNICATIONS RECEIVED AND FILED – INFORMATION**

*Clerk noted that no communications had been received.*

**9. DIRECTOR’S REPORT**

**Presenters:** Director Cratty.

**10. CHIEF'S REPORT**

**Presenters:** Sage Sangiacomo, Ukiah City Manager, Ryan Nelson, Battalion Chief, and Traci Boyd, Ukiah Senior Management Analyst.

**a. Report of Disbursements for December 1, 2025, Through January 31, 2026.**

**Presenter:** Ryan Nelson, Battalion Chief.

*No public comment was received.*

**Motion/Second:** Cratty/Graham to receive the report of disbursements for December 1, 2025, through January 31, 2026. Motion carried by the following roll call votes: AYES: Cavalin, Cratty, Graham, Jennings, and Bushby. NOES: None. ABSENT: None. ABSTAIN: None.

**11. ADJOURNMENT**

There being no further business, the meeting adjourned at 6:04 p.m.

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Pete Bushby, Board President

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Araceli Sandoval, Deputy Clerk of the Board



## AGENDA SUMMARY REPORT

**SUBJECT:** Approval of \$518,268.08 in Mitigation and Measure B Funds for a United States Department of Agriculture Disaster Grant Match for a 107-Foot Ladder Truck and Deferring Training Tower Project.

**DEPARTMENT:** Fire

**PREPARED BY:** Eric Singleton, Battalion Chief

**PRESENTER:** Eric Singleton, Battalion Chief

**ATTACHMENTS:**

1. Notice of Funding Opportunity #RUS-23-WATER-0009
2. GoldenStateQuote\_PierceQuint107LadderApparatus
3. Aerial DAS-6 Schematic
4. Specifications - Enforcer Ascendant 107' Ladder Quint
5. Ladder Truck City ASR

**Summary:** Staff has applied for funding through the United States Department of Agriculture (USDA) Community Facilities Disaster Grant Program to support the purchase of a new 107-foot ladder apparatus. If awarded, the grant requires a 25% local match.

Therefore, Staff requests the Ukiah Valley Fire District Board approve the use of Measure B and Mitigation Funds to provide the required match of 518,268.08. The Ukiah City Council has conducted a public hearing and approved submission of the grant application for this project.

The District is requested to: approve the use of District mitigation and Measure B funds to meet the required local match; and defer the Measure B-funded training tower project to fiscal year 2027-28, pending identification of a suitable site.

**Background:** The USDA Community Facilities Disaster Grant Program (Attachment 1) offers up to 75 percent funding for rural communities with fewer than 20,000 residents to repair or replace essential facilities affected by federally declared disasters. Ukiah qualifies due to damages from the storms in December 2022 and January 2023, and the City Council authorized Staff on April 1, 2026, to apply for a new 107-foot aerial apparatus. The Ladder Truck City ASR (Attachment 5) details the project and documents the public hearing. The Ukiah Valley Fire District currently operates a single ladder truck—a 2009 Pierce Quint with a 75-foot aerial ladder—that has surpassed the National Fire Protection Association (NFPA) recommended frontline service life and has become increasingly unreliable. This sole apparatus provides vital capabilities for structure fires, roof ventilation, elevated water application, and technical rescues, but reliance on one unit creates operational risks during maintenance or multiple incidents. Attachments 2-4, include the Golden State quote, schematic, and specifications for the proposed Pierce Enforcer 107-foot ladder truck.

**Discussion:** The proposed Pierce Enforcer 107-foot ladder apparatus will significantly improve emergency response by increasing aerial reach, enhancing access to multi-story structures, and enabling rescues in areas with limited ground access. Pierce Manufacturing produces these units as a single-source manufacturer, integrating the chassis, cab, pump house, and aerial device to ensure durability, reliability, and performance. The apparatus meets NFPA 2024 standards and includes slip-resistant surfaces, certified inspections, and other safety features.

The City Council has already authorized Staff to submit the USDA grant application, so no further action from the Council is required. This discussion is directed to the Ukiah Valley Fire District Board, which manages the mitigation and Measure B funds, and is being asked to provide the matching funds and to delay the training tower project.

According to the Golden State Fire Apparatus quote, the base price of the Pierce Enforcer 107-foot ladder apparatus is \$1,899,705.00 with a state sales tax of \$168,598.82, a California tire fee of \$10.50, and a performance bond of \$4,758.00, for a total of \$2,073,072.32. The USDA grant will contribute approximately \$1,554,805 if approved, leaving a required local match of \$518,268.08. Staff proposes funding the match with \$123,588.00 from mitigation funds and \$394,680.08 from Measure B funds. Using less than 10% of the total project cost from mitigation funds maintains compliance with the restrictions on those funds.

Measure B also funds the training tower project. Staff recommends postponing the tower assembly until a suitable location is available and sufficient revenue is received in fiscal year 2026-27. Currently, no appropriate site exists for the tower, and delaying the project allows the District to allocate Measure B funds toward the ladder truck match without compromising training needs. The training tower will be reviewed in the 2027-28 budget once site selection and funding are confirmed.

Replacing the aging ladder apparatus is essential for maintaining public safety and operational readiness. A new 107-foot ladder truck will provide redundancy by placing the existing 2009 unit in reserve, ensuring continuous service during maintenance or multiple incidents. This project aligns with the District's strategic goals of improving critical infrastructure and strengthening community resilience. Staff has coordinated with the Fire Chief, the City's Grants Division, and the fleet manager to develop this funding plan and ensure that matching funds will be available when needed. The funds need to be available in the current fiscal year, even though grant approval is not anticipated until the next fiscal year. If the grant is not approved this fiscal year, the funds will be incorporated into the FY 2026-27 budget. Should the grant be awarded, Staff will bring forward a budget amendment if necessary.

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**Recommended Action:** Approve \$123,588.00 in mitigation funds and \$394,680.08 in Measure B funds, totaling \$518,268.08, to meet the 25% local match requirement for a United States Department of Agriculture Community Facilities Disaster Grant for the purchase of a Pierce Enforcer 107-foot single rear axle ladder apparatus; and defer the Measure B-funded training tower project until a suitable site is secured and funding is available in the FY 2027-28 budget.

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**BUDGET AMENDMENT REQUIRED:** Not at current date

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**CURRENT BUDGET AMOUNT:** N/A

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**PROPOSED BUDGET AMOUNT:** 91821400-80100-TBD: \$123,588.00 // 91721400-80100-TBD \$394,680.08

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**FINANCING SOURCE:** USDA Community Facilities Disaster Grant; Mitigation Fund; Measure B Fund

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**PREVIOUS CONTRACT/PURCHASE ORDER NO.:** N/A

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**COORDINATED WITH:** Douglas Hutchinson, Fire Chief; Traci Boyl, Senior Management Analyst; Dave Kirch, Fleet Manager

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Approved:   
Doug Hutchinson, Fire Chief

# Notices

Federal Register

Vol. 88, No. 119

Thursday, June 22, 2023

This section of the FEDERAL REGISTER contains documents other than rules or proposed rules that are applicable to the public. Notices of hearings and investigations, committee meetings, agency decisions and rulings, delegations of authority, filing of petitions and applications and agency statements of organization and functions are examples of documents appearing in this section.

## DEPARTMENT OF AGRICULTURE

### Rural Utilities Service

[DOCKET #: RUS-23-WATER-0009]

#### Notice of Funding Opportunity for Calendar Year 2022 Disaster Water Grants Program for Fiscal Year 2023; Water and Environmental Programs

**AGENCY:** Rural Utilities Service, USDA.

**ACTION:** Notice.

**SUMMARY:** The Rural Utilities Service (RUS or Agency), a Rural Development (RD) mission area of the United States Department of Agriculture (USDA), announces the acceptance of applications under the Calendar Year (CY) 2022 Disaster Water Grants Program for Fiscal Year (FY) 2023. The Agency will have at least \$247,250,000 in grant funding through the Disaster Relief Supplemental Appropriations Act, 2023. Grant funds will be made available to qualified, rural applicants to pay for necessary expenses related to water infrastructure systems damaged by events that occurred during CY 2022 and were recognized through Presidentially Declared Disasters. All applicants are responsible for any expenses incurred in developing their applications.

**DATES:** Applications will be accepted on a continual basis, beginning on June 22, 2023 until funds are exhausted. To comply with the Congressional Review Act, there is a 60-day delay in the effective date of this action, and the Agency will not take action on applications until the later of 60 days after notification to Congress or August 21, 2023.

**ADDRESSES:** Applications and supporting documentation must be submitted electronically through USDA's application intake system, RD APPLY, at <https://rdapply.usda.gov>. Application documents and additional resources are available at <https://>

[www.rd.usda.gov/programs-services/water-environmental-programs/calendar-year-2022-disaster-water-grants-program](https://www.rd.usda.gov/programs-services/water-environmental-programs/calendar-year-2022-disaster-water-grants-program).

This funding opportunity will also be posted to <https://www.grants.gov>.

**FOR FURTHER INFORMATION CONTACT:** Angela Tilghman, Water and Environmental Programs, RUS, USDA at [Water-RD@usda.gov](mailto:Water-RD@usda.gov). Persons with disabilities that require alternative means for communication should contact the USDA Target Center at (202) 720-2600 (voice) or the 711 Relay Service.

Funding under this Notice will be delivered in coordination with the USDA RD State Offices. Applicants are encouraged to contact their respective USDA RD State Offices, as designated by where the project is located, for further information on submitting applications under this Notice. A list of USDA RD State Office contacts is provided at the following link: <https://www.rd.usda.gov/about-rd/state-offices>.

#### SUPPLEMENTARY INFORMATION:

##### Overview

**Federal Awarding Agency Name:** Rural Utilities Services.

**Funding Opportunity Title:** Calendar Year 2022 Disaster Water Grants Program.

**Announcement Type:** Notice of Funding Opportunity (NOFO).

**Funding Opportunity Number:** RD-RUS-CY22Disaster.

**Assistance Listing:** 10.760.

**Dates:** Applications will be accepted on a continual basis, beginning on June 22, 2023, until funds are exhausted. To comply with the Congressional Review Act, there is a 60-day delay in the effective date of this action, and the Agency will not take action on applications until the later of 60 days after notification to Congress or August 21, 2023.

**Rural Development Key Priorities:** The Agency encourages applicants to consider projects that will advance the following key priorities:

- Assisting rural communities recover economically through more and better market opportunities and through improved infrastructure;
- Ensuring all rural residents have equitable access to RD programs and benefits from RD funded projects; and
- Reducing climate pollution and increasing resilience to the impacts of

climate change through economic support to rural communities.

#### A. Program Description

1. **Purpose of the Program.** The CY 2022 Disaster Water Grants Program is designed to assist communities by awarding grant funds to qualified entities for expenses related to water infrastructure systems in designated areas that were impacted by events that occurred during CY 2022 and were recognized through Presidentially Declared Disasters. In addition to damage repairs, these grants are also intended to develop system capacity and resiliency in order to reduce or eliminate long-term risks from future events. Subject to any updates to the Presidentially Declared Disasters, the following states have been identified as containing areas that have been impacted by qualifying events during CY 2022: Alaska, American Samoa, Arizona, California, Florida, Hawaii, Idaho, Illinois, Iowa, Kansas, Kentucky, Maine, Massachusetts, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, Puerto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, U.S. Virgin Islands, Virginia, Washington, and West Virginia. For the most current list of Presidentially Declared Disasters, visit the United States (U.S.) Department of Homeland Security, Federal Emergency Management Agency (FEMA) website at <https://www.fema.gov/disaster/declarations>.

2. **Statutory and Regulatory Authority.** The CY 2022 Disaster Water Grants Program is authorized pursuant to 5 U.S.C. 301; 7 U.S.C. 1989; 16 U.S.C. 1005; and Division N of the Consolidated Appropriations Act, 2023, Public Law 117-328. It is implemented in accordance with the provisions established within Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, 2 CFR parts 200 and 400, uniform Federal grant awards regulations, 7 CFR part 1780 and this NOFO.

3. **Definitions.** The terms and conditions provided in this NOFO are applicable to and for purposes of this NOFO only.

**Agency.** RUS or its successors, and the USDA RD employees acting on

behalf of RUS in accordance with the appropriate delegations of authority.

**Calendar Year (CY).** The period-of-time beginning on January 1 and ending on December 31 of each year.

**Eligible Project Costs.** The costs incurred during the period of performance and that are directly related to the use and purposes of the CY 2022 Disaster Water Grants Program. See Section C.2. of this Notice for eligible project costs.

**Median Household Income (MHI).** The income data used in this part to determine MHI must be that which most accurately reflects the income of the service area. The MHI will be the income data for the service area as determined by the Agency-approved five-year income dataset from the United States Department of Commerce, United States Census Bureau, American Community Survey (ACS) or, if needed, other Agency-approved Census Bureau data. If there is reason to believe that the ACS data is not an accurate representation of the MHI within the area to be served, the reasons will be documented and the applicant may furnish, or the Agency may obtain, additional information regarding such MHI. Information will consist of reliable data from local, regional, State, Tribal or Federal sources, or from a survey conducted by a reliable impartial source which meets Agency established standards.

**Prefabricated Homes Communities.** Mobile, manufactured, and modular homes that share a private public water and/or sewer system.

**Presidentially Declared Disasters.** A declaration made by the President in accordance with applicable statutes that a disaster exists, necessitating assistance in the recovery of the impacted area.

**Rural or Rural Area.** For purposes of this Notice, any area in a city, town, or unincorporated area identified through Presidentialy Declared Disasters with a population not in excess of 35,000 inhabitants, according to the latest Agency-implemented decennial census of the United States. The population of the community is as adjusted by the exclusion of individuals incarcerated on a long-term or regional basis, and the exclusion of the first 1,500 individuals who reside in housing located on a military base. The area to be served may be made up of combinations of these eligible areas. If the applicable population figure cannot be obtained from the most recent decennial Census, RUS will determine the applicable population figure based on available population data. Facilities financed may be located in non-rural areas. However, funds may be used to finance only that

portion of the facility serving rural areas, regardless of facility location.

**State.** References in this NOFO to State, State government, or State agency are limited to any of the 50 States of the U.S., the Commonwealth of Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and, as may be determined by the Secretary to be feasible, appropriate and lawful, the Freely Associated States and the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau which were identified through Presidentialy Declared Disasters related to events that occurred during CY 2022.

**State Nonmetropolitan Median Household Income (SNMHI).** Median household income of a state's nonmetropolitan counties and portions of metropolitan counties outside of cities, towns, or places of 50,000 or more in population. The SNMHI is set by the Agency. The nonmetropolitan median household income of the State may only be updated on a national basis by the Agency.

**4. Application of Awards.** The Agency will review, evaluate, and score applications received in response to this Notice. Awards under the CY 2022 Disaster Water Grants Program will be made on a rolling basis, providing priority to applications using specific selection criteria contained in this Notice. The Agency advises all interested parties that the applicant bears the full burden in preparing and submitting an application in response to this Notice regardless of if funding is awarded.

#### B. Federal Award Information

**Type of Award:** Grants.

**Fiscal Year Funds:** FY 2023.

**Available Funds:** At least \$247,250,000. RUS may at its discretion, increase the total level of funding available in this funding round from any available source provided the award(s) meets the requirements of the statute which made the funding available to the Agency.

**Award Amounts:** No minimum or maximum award amount.

**Anticipated Award Date:** Summer 2023 until all funds are expended.

**Performance Period:** The grant period is not to exceed 48-months from the obligation of funds date, unless agreed to by the Agency.

**Renewal or Supplemental Awards:** Applications for renewal or supplementation of existing projects may be eligible to compete with applications for new Federal awards under this program. Funding provided

through this NOFO does not guarantee or otherwise imply any future commitment of funding for renewal or supplementation of existing projects. Should additional RUS funding be needed from other Agency programs to carry out the proposed scope of work, the application requirements of each program will be applicable.

**Type of Assistance Instrument:** Grant Agreement.

**Approximate Number of Awards:** The number of awards will depend on the number of eligible applications and the total amount of requested funds.

#### C. Eligibility Information

**1. Eligible Applicants.** Eligible applicants must meet the following eligibility requirements:

(a) Be either a Public Body, an organization operated on a not-for-profit basis, a tribe, or a prefabricated home organization operating an eligible community-based system. Non-tribal applicants proposing to serve tribes and tribal areas should have the support of those tribes either in the form of a Tribal Resolution and/or letter of support for the project impacting their communities.

(b) Be eligible to receive and administer a Federal grant under Federal law.

(c) Each applicant must: (1) Have or will obtain the legal authority necessary for owning, constructing, operating, and maintaining the facility or service to be repaired or replaced and for issuing security for the proposed grant; (2) Be responsible for operating, maintaining, and managing the facility, and providing for its continued availability and use at reasonable user rates and charges; and (3) Retain this responsibility even though the facility may be operated, maintained, or managed by a third party under contract or management agreement.

(d) Demonstrate that they possess the technical, managerial, and financial capability necessary to consistently comply with pertinent Federal and State laws and requirements.

(e) Have no delinquent debt to the federal government or no outstanding judgments to repay a federal debt.

#### 2. Eligible Project Costs.

(a) Grant funds may be used by eligible applicants to pay for expenses:

(1) Related to restoration, repair, or rebuilding to water infrastructure systems. Water infrastructure systems include drinking water, wastewater, solid waste, and stormwater projects serving eligible communities. Adequate documentation must be provided to demonstrate impacts to the water

infrastructure systems, watershed, or water resources.

(2) To develop system capacity and resiliency to reduce or eliminate long-term risks from hazards and their effects on water infrastructure systems identified above.

(3) Related to restoration, repair, or rebuilding, and is not limited to replacing what was present prior to the disaster. Facilities should be planned and constructed in a sustainable way that reduces or eliminates long-term risk to people and property from future disasters. Projects must consider current and future community needs and meet current building codes and other standards, while also improving resilience to future disasters.

(b) When associated with an eligible construction project, funding may be used to pay for:

(1) Reasonable fees and costs such as: legal, engineering, administrative services, fiscal advisory, recording, environmental analyses and surveys, possible salvage or other mitigation measures, planning, establishing or acquiring rights.

(2) Costs of acquiring interest in land to include rights, leases, permits, rights-of-way; and other evidence of land or protection necessary for development of the facility.

(3) Purchasing or renting equipment necessary to install, operate, maintain, extend, or protect facilities.

(4) Costs of additional applicant labor and other expenses necessary to install and extend service.

(5) Costs for connecting the user to the main service line.

(6) Repairs and replacements already made to restore service. Grants may be awarded to reimburse applicants for expenses incurred in recovery and response efforts. Adequate documentation must be provided to demonstrate that the expenses are related to an event that occurred in CY 2022 identified through a Presidentially Declared Disaster, and that it was necessary to complete the repairs prior to submitting an application for assistance. Additional documentation may be needed to ensure environmental and certain other Agency requirements are met.

(7) Other costs that the Agency determines to be eligible and necessary.

(c) Project costs must be for necessary expenses related to water infrastructure systems damaged by events that occurred during CY 2022 and were recognized through Presidentially Declared Disasters.

3. *Cost Sharing or Matching.* There are no cost sharing or matching requirements associated with this grant.

4. *Other.* There shall be no reimbursement for repairs, replacements, or other improvements made or financed using insurance proceeds or funding from other Federal grant programs, including but not limited to awards provided by FEMA, U.S. Environmental Protection Agency or state agencies delivering funding on its behalf, and U.S. Housing and Urban Development's Community Development Block Grants.

#### *D. Application and Submission Information*

1. *Address to Request Application Package.* General information related to the CY 2022 Disaster Water Grants Program, copies of necessary forms and samples, and other program guidance is available at <https://www.rd.usda.gov/programs-services/water-environmental-programs/calendar-year-2022-disaster-water-grants-program>. Applications and supporting documentation must be submitted electronically through USDA's application intake system, RD APPLY, at <https://rdapply.usda.gov>.

For additional information on how to apply, including local field office contacts, please see the "For Further Information Contact" section of this Notice.

2. *Content and Form of Application Submission.* To be considered for funding, applicants must be an eligible entity and submit a complete application. A complete application must contain all required elements outlined in this Notice. Applicants will be required to submit the following items to the processing office electronically via RD APPLY.

(a) Standard Form (SF) 424, "Application for Federal Assistance."

(b) SF 424-C, "Budget Information-Construction Programs."

(c) SF 424-D, "Assurances-Construction Programs."

(d) Form RD 1910-11, "Application Certification, Federal Collection Policies for Consumer or Commercial Debts."

(e) Form RD 400-1, "Equal Opportunity Agreement."

(f) Form RD 400-4, "Assurance Agreement."

(g) If the applicant is a public body, the following must be provided:

(1) Copy of a resolution, statute, or state constitutional provision that creates the public body, or

(2) Legal opinion from the applicant's attorney identifying the name and title of the official who can act on behalf of the applicant and denoting the applicant's legal authority to: (1) Accept grant funds and enter into the proposed transaction and (2) Comply with regulatory requirements and carry out

the responsibilities imposed by the program.

(h) If the applicant is a nonprofit entity, the following must be provided:

(1) At least one of the following must be presented:

(A) Documentation to verify the IRS currently recognizes the applicant as a 501(c)(3) organization;

(B) A statement from a State taxing body or the State attorney general certifying that: (i) The organization is a nonprofit operating within the state, and (ii) No part of its net earnings may lawfully benefit any private shareholder or individual; or,

(C) A certified copy of the applicant's certification of incorporation or similar document if it clearly establishes the nonprofit status of the applicant.

(2) Certificate of Good Standing from the Secretary of State.

(3) Articles of Incorporation and amendments (if applicable).

(4) Current By-Laws.

(5) List of local Board of Director to include addresses and term period.

(i) If the applicant is a prefabricated home communities' organization, the following must be provided:

(1) Articles of Organization.

(2) Employer Identification Number.

(3) Operating Licenses and Certifications, as required.

(4) Operating Agreement.

(j) A copy of, or reference to, the Presidential Disaster Declaration used to qualify for funding under this Notice.

(k) The material submitted with the application should include a preliminary engineering report, population and median household income of the area to be served, and descriptions of the existing facility, proposed project and nature of the disaster that caused the problem(s) being addressed by the project. To meet these requirements, a preliminary engineering report is required that offers adequate justification of need, defines scope of the proposed work, and cost estimate. The simplified engineering report template in items i thru iii below may be considered for projects that are repair-in-kind and that do not require funding from other Agency programs. Projects that do not meet the preceding, must follow RUS Bulletin 1780-2, Preliminary Engineering Reports for the Water and Waste Disposal. The following items are to be considered with simplified preliminary engineering reports:

(1) *Scope of Work.* Describe work to be performed including type, amount, and a brief description and justification of engineering design parameters used.

(2) *Cost Estimate.* Provide an itemized estimate of the total project cost based

on the stated period of construction. Include development and construction, land and rights, legal, engineering, equipment, contingencies, and other costs associated with the proposed project.

(3) *System Resiliency and Water Reuse*. When possible, system resiliency and water reuse options should be considered.

(l) A certification or letter from applicant or its attorney regarding any insurance coverage and claims, FEMA, or another Federal funding agency for this project.

(m) A completed environmental documentation report and certifications prepared in accordance with 7 CFR part 1970; and

(n) A copy of the applicant's most recent year-end financial statements, and a current balance sheet, income statement, and operating budget. The following forms may be used to present the information:

(1) Form RD 442-3, "Balance Sheet" or similar form.

(2) Form RD 442-2, "Statement of Budget, Income and Equity" or similar form.

(3) Form RD 442-7, "Operating Budget" or similar form.

**3. System for Award Management and Unique Entity Identifier.**

(a) At the time of application, each applicant must have an active registration in the System for Award Management (SAM) before submitting its application in accordance with 2 CFR part 25, Universal Identifier and System for Award Management. To register in SAM, entities will be required to obtain a Unique Entity Identifier (UEI). Instructions for obtaining the UEI are available at <https://sam.gov/content/entity-registration>.

(b) Each applicant must maintain an active SAM registration, with current, accurate and complete information, at all times during which it has an active Federal award or an application under

consideration by a Federal awarding agency.

(c) Each applicant must ensure they complete the Financial Assistance General Certifications and Representations in SAM.

(d) Applicants must provide a valid UEI in its application, unless determined exempt under 2 CFR 25.110, Exceptions.

(e) The Agency will not make an award until the applicant has complied with all SAM requirements including providing the UEI. If an applicant has not fully complied with the requirements by the time the Agency is ready to make an award, the Agency may determine that the applicant is not qualified to receive a Federal award and use that determination as a basis for making a Federal award to another applicant.

(f) The entity that will retain the rights to own, operate, and maintain the constructed facility will also be required to complete the registration requirements outlined above. The timing of any requirements will be outlined in the Grant Agreement issued following the selection of an application.

**4. Submission Dates and Times.** Applications will be accepted on a continual basis, beginning on June 22, 2023, until funds are exhausted.

**5. Intergovernmental Review.** Executive Order (E.O.) 12372, "Intergovernmental Review of Federal Programs," applies to this program. This E.O. requires that Federal agencies provide opportunities for consultation on proposed assistance with State and local governments. Many states have established a Single Point of Contact (SPOC) to facilitate this consultation. For a list of States that maintain a SPOC, please see the White House website: <https://www.whitehouse.gov/omb/management/office-federal-financial-management/>. If your State has a SPOC, you may submit a copy of the application directly for review. Any

comments obtained through the SPOC must be provided to your State Office for consideration as part of your application. If your state has not established a SPOC, you may submit your application directly to the Agency. Applications from Federally Recognized Tribes are not subject to this requirement.

**6. Funding Restrictions.** Applications must be for eligible purposes as defined in Section C.2. of this Notice. Funding may not be used to pay for the following costs:

(a) Facilities which are not modest in size, design, and cost;

(b) Grant finder's fees;

(c) The construction of any new combined storm and sanitary sewer facilities;

(d) Any portion of the cost of a facility which does not serve a rural area;

(e) That portion of project costs normally provided by a business or industrial user, such as wastewater pretreatment, etc.;

(f) Rental for the use of equipment or machinery owned by the applicant;

(g) For other purposes not directly related to operation and maintenance of the facility being installed or improved; and

(h) Pay project costs when other funding is a guaranteed loan obtained in accordance with 7 CFR part 5001.

**7. Other Submission Requirements.** Applications and supporting information will not be accepted via, fax, electronic mail, or any other medium other than through RD APPLY at <https://rdapply.usda.gov>.

**E. Application Review Information**

**1. Criteria.** When ranking eligible applications for consideration for limited funds, Agency officials must consider the priority items met by each application and the degree to which those priorities are met. Points will be awarded as follows:

Criteria No.	Criteria	Points
1	Population of proposed area(s) to be served (based on Census data):	
	a. Not in excess of 2,500	30
	b. More than 2,500 and not in excess of 5,500	20
	c. More than 5,500 and not in excess of 10,000	15
	d. Over 10,000	0
2	Income: The MHI of population to be served by the proposed project is:	
	a. Not in excess of 70 percent of the SNMHI or below poverty guideline	30
	b. More than 70 percent and not in excess of 80 percent of the SNMHI	20
	c. More than 80 percent and not in excess of 90 percent of the SNMHI	15
	d. More than 90 percent of the SNMHI	0
3	Health Priorities:	
	a. Needed to alleviate an emergency situation, correct unanticipated diminution in quantity or deterioration in quality of a water supply, or to meet Safe Drinking Water Act requirements which pertain to a water system.	25
	b. Required to correct inadequacies of a wastewater disposal system, or to meet health standards which pertain to a wastewater disposal system.	25

Criteria No.	Criteria	Points
	c. Required to meet administrative orders issued to correct local, State or Federal solid waste violations.	15
4	Other Priorities: Amount of non-Agency funds committed to the project: .....	15
	A. 50 percent or more .....	10
	B. 20 percent to 49 percent .....	5
	C. 5 percent to 19 percent .....	0
	D. Less than 5 percent .....	0
	The proposed project will enlarge, extend, or otherwise modify existing facilities to provide service to additional rural areas.	10
	The proposed project will serve an area that has an unreliable quality or supply of drinking water	10
5	Project promotes long-term system sustainability, resiliency and water reuse .....	Up to 15
	Administrator Discretion: RUS Administrator may provide additional points based on the identified factor * .....	15

\* Administrator Discretionary Points—In order to be considered for Administrator Discretionary Points, the applicant must provide adequate documentation to address the following factor:

Project is located in a Disadvantaged Community or a Distressed Community (15 points will be added). A Disadvantaged Community will be determined by the Agency by using the Council on Environmental Quality's Climate and Economic Justice Screening Tool (which is incorporated into the USDA look-up map) which identifies communities burdened by climate change and environmental injustice. Additionally, all communities within the boundaries of Federally Recognized Tribes and Alaska Native Villages will also be determined to be Disadvantaged Communities by the Agency. Distressed Community will be determined by the Agency by using the Economic Innovation Group's Distressed Communities Index (which is incorporated into the USDA look-up map), which uses several socio-economic measures to identify communities with low economic well-being. To determine if your project is located in a Disadvantaged Community or a Distressed Community, please use the following USDA look-up map: <https://ruraldevelopment.maps.arcgis.com/apps/webappviewer/index.html?id=4acf083be4c44bb7864d90f97de0c788>.

The Administrator Discretionary Points will be awarded solely on the aforementioned factor.

**2. Review and Selection Process.** Within 10 working days of receiving an application, the Agency will send you a notification of acknowledgment. The application will be reviewed for completeness to determine if all the required items were included. If the application is incomplete or ineligible, the Agency will return it with an explanation. Applicants may resubmit applications deemed incomplete or ineligible after revising them in accordance with the Agency explanation. The Agency reserves the

right to offer the applicant less than the grant funding requested.

#### F. Federal Award Administration Information

##### 1. Federal Award Notices

(a) *Application Outcomes.* There are four possible outcomes following the submission of an application under the CY 2022 Disaster Water Grants Program. The Agency reserves the right to make no grant awards if all applications are ineligible, incomplete or do not meet the established program objectives and priorities. The Agency may determine that the application is:

- (1) Eligible and selected for funding,
- (2) Eligible but offered fewer funds than requested,
- (3) Eligible but not selected for funding, or
- (4) Ineligible for the grant.

(b) *Award Notices.* Applicants selected for funding will be sent a Letter of Conditions, accompanied by a grant agreement, which outlines the terms and conditions of the award, and other applicable documents. Pursuant to the grant agreement, 2 CFR parts 200 and 400, and other applicable provisions, grant funds may be released over the course of the grant period in reimbursement for the performance of eligible, approved activities which do not duplicate similar federal efforts or tasks. The grant agreement may also include reporting and pre-approval requirements. If such requirements are not met, it may result in a delay in reimbursement, disallowance of expense, or a suspension of the grant.

(c) *Payments/Reimbursements.* Grantees will be reimbursed as per Letter of Conditions, the grant agreement, and this Notice. No funds will be disbursed prior to the Agency's receipt of the fully executed grant agreement. Funding requests may be submitted for allowable costs up to monthly and must include the

appropriate supporting documentation, which may include copies of payments made to contractors and other parties, and evidence of the completed work. Payment requests must be submitted using form SF-270, "Request for Advance or Reimbursement," or similar agency approved substitute. The grantee is responsible for the monitoring and oversight of any construction, including the monitoring of progress related to the goals and objectives and any reporting required in Section F.3. of this Notice. Construction must be performed in accordance with 7 CFR 1780, sections 1780.57, 1780.61, and 1780.67 through 1780.76.

(d) *Scope of Services.* The scope of work will be attached to the executed grant agreement. Related to non-reimbursement construction applications, the grantee is responsible for ensuring that all contractual, legal, and program requirements are met prior to starting work. Construction projects that require refinement to the scope of work post-obligation will provide an updated scope of work prior to proceeding with any design or entering into any contracts. RUS will review the scope of work to ensure that the project costs are eligible and then affix the revised scope of work to the grant agreement. The grantee must ensure that any updated scope of work documents meet all accessibility, civil rights, environmental, and other applicable standards.

Any change in the scope of the project, budget adjustments of more than 20 percent of the total budget, or any other significant change in the project scope must be reported to and approved by the approval official by written amendment to the grant agreement. Any change not properly approved may be cause for termination of the grant.

**2. Administrative and National Policy Requirements.** There are no known

unusual Administrative and National Policy Requirements associated with the CY 2022 Disaster Water Grants Program. This Notice is subject to the terms and requirements of Departmental and other regulations, including 2 CFR parts 180, 182, 200, 400, 421 and any successor regulations implementing the appropriate administrative and national policy requirements.

3. *Reporting.* Performance reporting, including applicable forms, narratives, financials, and other documentation, are to be completed and submitted in accordance with the provisions of this Notice, 2 CFR parts 200 and 400, and the grant agreement. Further, all grantees must submit an audit or financial information covering the defined period of performance as outlined in this Notice, 2 CFR part 200, subpart F, and the grant agreement.

As outlined in Section F.1. of this Notice, Grant recipients shall constantly monitor performance to ensure that time schedules are being met, projected work by time periods is being accomplished, and other performance objectives are being achieved. The recipient will provide project reports to the Agency as follows:

(a) *"Federal Financial Report (SF 425)" and Project Performance Report.* An SF 425 and a project performance activity report will be required of all recipients on a quarterly basis, due 30 days after the end of each quarter.

(b) *Final Project Performance Report.* A final project performance report will be required with the last SF 425 due 90 days after the end of the last quarter in which the project is completed.

(c) *Financial Reporting.* The recipient will provide an audit report or financial statements to the Agency as follows:

(1) Recipients expending \$750,000 or more Federal funds per fiscal year will submit an audit conducted in accordance with 2 CFR part 200. The audit will be submitted within the earlier of 30 calendar days after receipt of the auditor's report(s), or nine months after the recipient's fiscal year. Additional audits may be required if the project period covers more than one fiscal year.

(2) Recipients expending less than \$750,000 will provide annual financial statements covering the grant period, consisting of the organization's statement of income and expense and balance sheet signed by an appropriate official of the organization. Financial statements will be submitted within 90 days after the recipient's fiscal year.

#### G. Federal Awarding Agency Contact(s)

For general questions about this announcement, please see the contact

information provided in the **FOR FURTHER INFORMATION CONTACT** section of this Notice.

#### H. Other Information

1. *Congressional Review Act Statement.* Pursuant to subtitle E of the Small Business Regulatory Enforcement Fairness Act of 1996 (also known as the Congressional Review Act or CRA); 5 U.S.C. 801 *et seq.*, the Office of Information and Regulatory Affairs in the Office of Management and Budget designated this action as a major rule as defined by 5 U.S.C. 804(2), because it is likely to result in an annual effect on the economy of \$100,000,000 or more. Accordingly, there is a 60-day delay in the effective date of this action, and the Agency will not take action on applications until the later of 60 days after notification to Congress or August 21, 2023.

2. *Paperwork Reduction Act.* In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 35), the information collection requirements associated with the program, as covered in this Notice, have been approved by the Office of Management and Budget (OMB) under OMB Control Number 0572-0121.

3. *National Environmental Policy Act.* All recipients under this Notice are subject to the requirements of 7 CFR part 1970.

4. *Federal Funding Accountability and Transparency Act.* All applicants, in accordance with 2 CFR part 25, must be registered in SAM and have a UEI number as stated in Section D.3 of this Notice. All recipients of Federal financial assistance are required to report information about first-tier sub-awards and executive total compensation in accordance with 2 CFR part 170, Reporting sub-award and executive compensation information.

5. *Civil Rights Act.* All grants made under this Notice are subject to title VI of the Civil Rights Act of 1964 as required by the USDA (7 CFR part 15, subpart A (7 CFR 15, subpart A—Nondiscrimination in Federally-Assisted Programs of the Department of Agriculture—Effectuation of title VI of the Civil Rights Act of 1964) and section 504 of the Rehabilitation Act of 1973, title VIII of the Civil Rights Act of 1968, title IX, Executive Order 13166 (Limited English Proficiency), Executive Order 11246, and the Equal Credit Opportunity Act of 1974.

6. *Nondiscrimination Statement.* In accordance with Federal civil rights laws and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Mission Areas, agencies, staff offices,

employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Program information may be made available in languages other than English. Persons with disabilities who require alternative means of communication to obtain program information (e.g., Braille, large print, audiotape, American Sign Language) should contact the responsible Mission Area, agency, or staff office; the USDA TARGET Center at (202) 720-2600 (voice and TTY); or the 711 Relay Service.

To file a program discrimination complaint, a complainant should complete a Form AD-3027, USDA Program Discrimination Complaint Form, which can be obtained online at <https://www.usda.gov/sites/default/files/documents/ad-3027.pdf> from any USDA office, by calling (866) 632-9992, or by writing a letter addressed to USDA. The letter must contain the complainant's name, address, telephone number, and a written description of the alleged discriminatory action in sufficient detail to inform the Assistant Secretary for Civil Rights (ASCR) about the nature and date of an alleged civil rights violation.

The completed AD-3027 form or letter must be submitted to USDA by:

(a) *Mail:* U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue SW, Washington, DC 20250-9410; or

(b) *Fax:* (833) 256-1665 or (202) 690-7442; or

(c) *Email:* [program.intake@usda.gov](mailto:program.intake@usda.gov).

USDA is an equal opportunity provider, employer, and lender.

**Andrew Berke,**

*Administrator, Rural Utilities Services, USDA Rural Development.*

[FR Doc. 2023-13232 Filed 6-21-23; 8:45 am]

BILLING CODE 3410-15-P

**UKIAH VALLEY FIRE AUTHORITY**

**Golden State Fire Apparatus/ Pierce Quote Information**

**February 20, 2026**

**The following quote is for:**

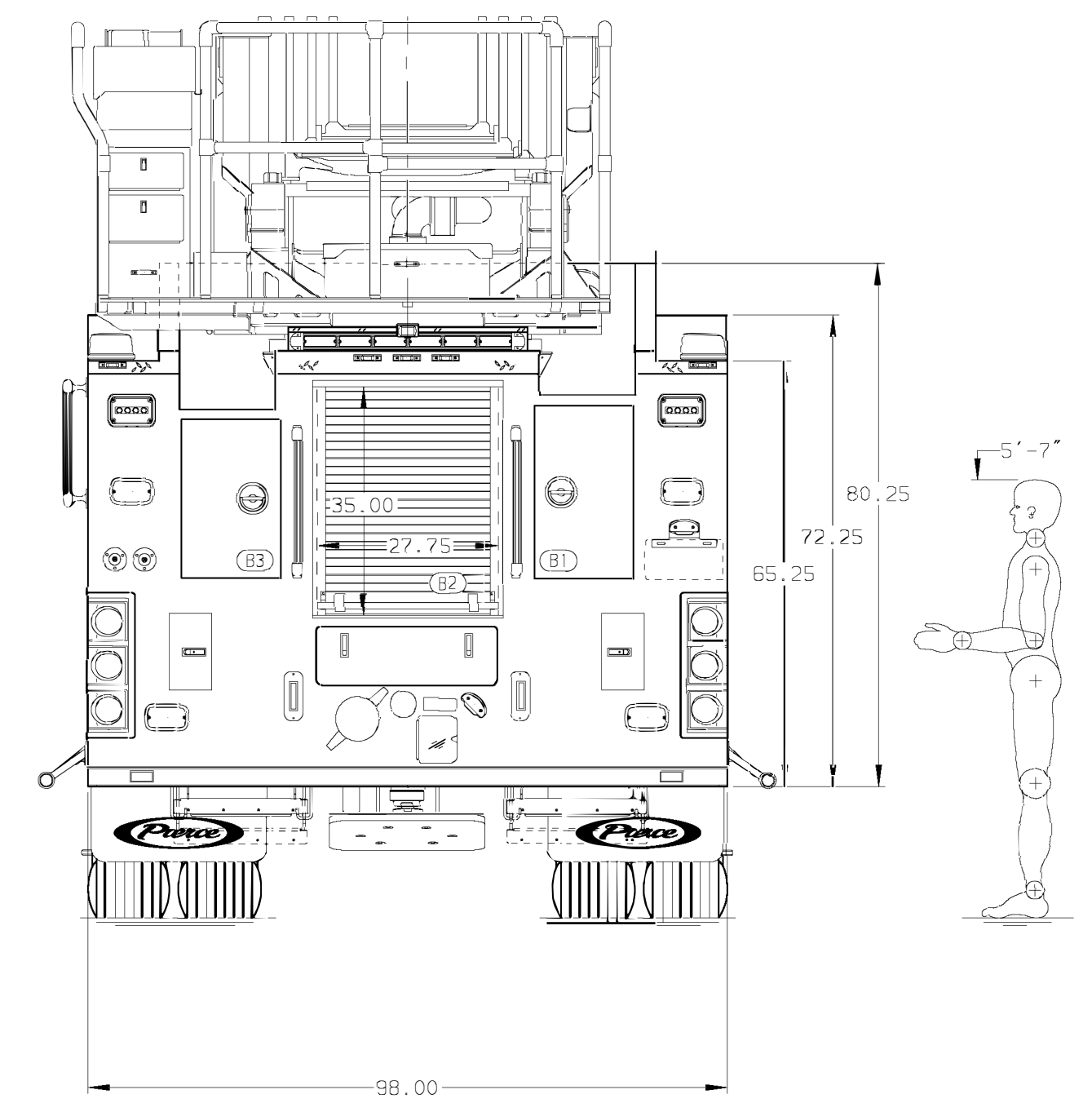
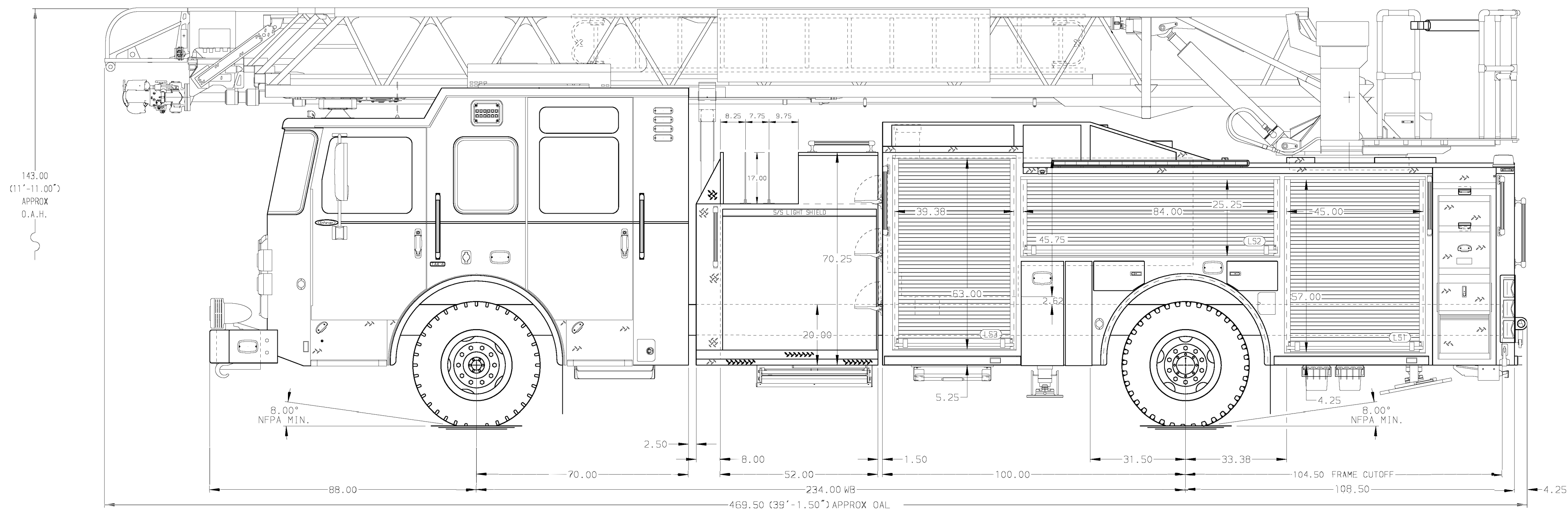
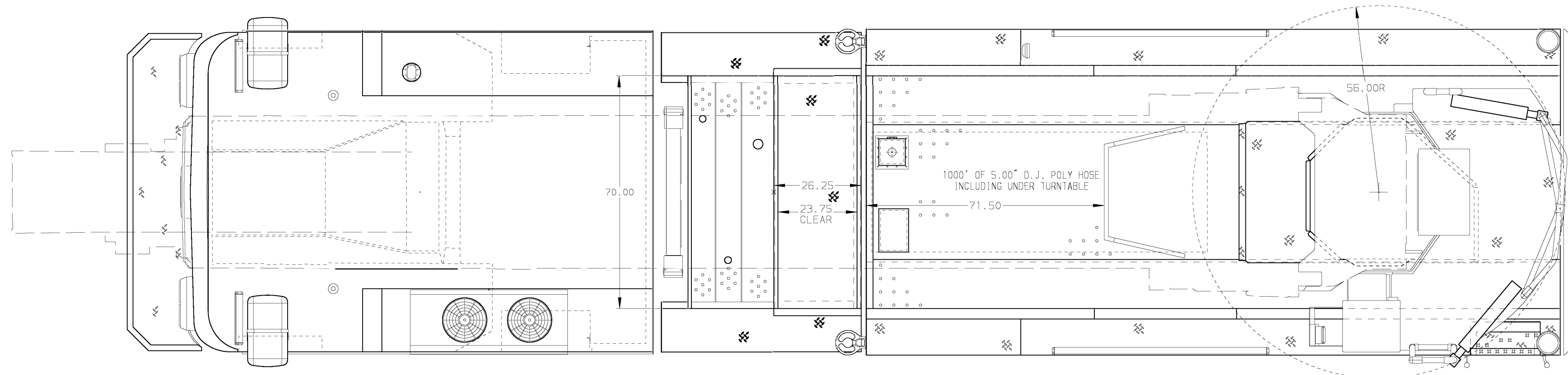
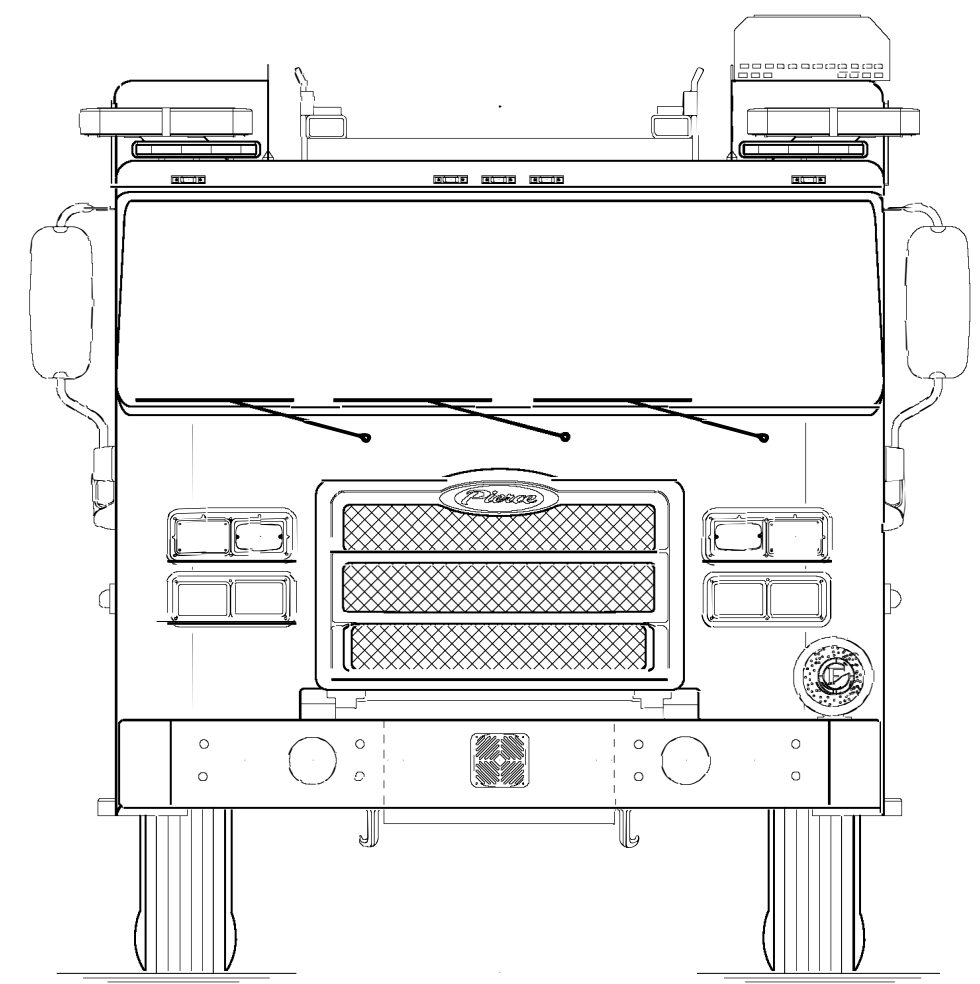
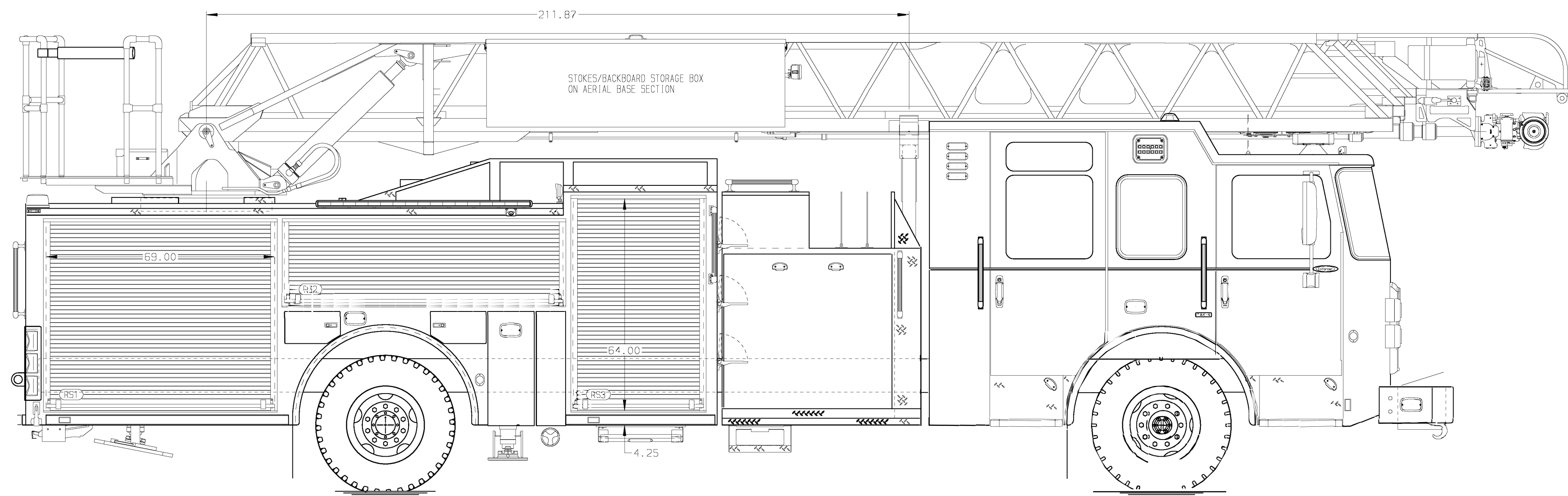
- One (1) Pierce Enforcer 107' Single Rear Axle Quint Aerial Apparatus

**The following quote includes the following:**

- Third party performance bond.
- One factory final inspection trip for two (2) customer representatives.
- Delivery of vehicle from the factory to dealership. Pre-delivery inspection at the dealership.
- Final delivery to customer location.
- DMV registration.
- State sales tax.
- California tire fee.
- Vehicle completion is scheduled for third quarter, 2027.
- Vehicle is available for immediate sale in the Pierce Dealer Allocated Stock program on a **“first come, first served”** basis.
- Quote is valid for thirty days.

**PAYMENT DUE AT TIME OF FINAL INSPECTION**

#	Description	Unit Price
<b>A</b>	Pierce Enforcer 107' Quint Aerial Apparatus	\$1,899,705.00
<b>B</b>	8.875% State Sales Tax	\$168,598.82
<b>C</b>	California Tire Fee	\$10.50
<b>D</b>	Third Party Performance Bond	\$4,758.00
<b>GRAND TOTAL</b>		<b>\$2,073,072.32</b>



NOTE  
DIMENSIONS SHOWN ARE APPROXIMATE  
AND ARE SUBJECT TO MINOR DEVIATIONS  
AS MAY OCCUR OR BE NECESSARY IN  
CONSTRUCTION.  
MINOR DETAILS NOT SHOWN.

REV	DATE	BY	CH

		JOB NO.	PRELIM
		SCALE	DATE
TITLE	107' ASCENDANT AERIAL LADDER AND BODY ASSEMBLY	DRAWN BY	LWE
FOR	PIERCE FIELD UNIT STRUM, ANDY	CHECKED BY	-
DWG NO.	BID 2723	SHEET SIZE	SHEET NO.
		D	1 OF 1

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

**SINGLE SOURCE MANUFACTURER**

Pierce Manufacturing, Inc. provides an integrated approach to the design and manufacture of our products that delivers superior apparatus and a dedicated support team. From our facilities, the chassis, cab weldment, cab, pump house (including the sheet metal enclosure, valve controls, piping and operators panel) body and aerial device will be entirely designed, tested, and hand assembled to the customer's exact specifications. The electrical system either hardwired or multiplexed, will be both designed and integrated by Pierce Manufacturing. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) will be provided by Pierce as a single source manufacturer. Pierce's single source solution adds value by providing a fully engineered product that offers durability, reliability, maintainability, performance, and a high level of quality.

Your apparatus will be manufactured in Appleton, Wisconsin.

**NFPA 2024 STANDARDS**

This unit will comply with the NFPA standards effective January 1, 2024, except for fire department directed exceptions. These exceptions will be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing and walking surfaces will be supplied with delivery of the apparatus.

All horizontal surfaces designated as a standing or walking surface that are greater than 48.00" above the ground must be defined by a 1.00" wide line along its outside perimeter. Perimeter markings and designated access paths to destination points will be identified on the customer approval print and are shown as approximate. Actual location(s) will be determined based on materials used and actual conditions at final build. Access paths may pass through hose storage areas and opening or removal of covers or restraints may be required. Access paths may require the operation of devices and equipment such as the aerial device or ladder rack.

A plate that is highly visible to the driver while seated will be provided. This plate will show the overall height, length, and gross vehicle weight rating.

The manufacturer will have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company will designate, in writing, who is qualified to witness and certify test results.

**NFPA COMPLIANCY**

Apparatus proposed by the bidder will meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications will be indicated in the proposal as "non-NFPA".

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

**INSPECTION CERTIFICATE**

A third party inspection certificate for the aerial device will be furnished upon delivery of the aerial device. The certificate will be Underwriters Laboratories Inc. Type 1 and will indicate that the aerial device has been inspected on the production line and after final assembly.

Visual structural inspections will be performed on all welds on both aluminum and steel ladders.

On critical weld areas, or on any suspected defective area, the following tests will be conducted:

- Magnetic particle inspection will be conducted on steel aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. Magnets will be placed on each side of the weld while iron powder is placed on the weld itself. The powder will detect any crack that may exist. This test will conform to ASTM E709 and be performed prior to assembly of the aerial device.
- A liquid penetrant test will be conducted on aluminum aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. This test will conform to ASTM E165 and be performed prior to assembly of the aerial device.
- Ultrasonic inspection will be conducted on all aerials to detect any flaws in pins, bolts and other critical mounting components.

In addition to the tests above, functional tests, load tests, and stability tests will be performed on all aerials. These tests will determine any unusual deflection, noise, vibration, or instability characteristics of the unit.

**PUMP TEST**

The pump will be tested, approved and certified by Underwriter's Laboratory at the manufacturer's expense. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the manufacturer's record of pump construction details will be forwarded to the Fire Department.

**VEHICLE INSPECTION PROGRAM CERTIFICATION**

To assure the vehicle is built to current NFPA 1900 standards, the apparatus, in its entirety, will be third-party, independent, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition. The certification includes: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus.

A placard will be affixed in the driver's side area stating the third party agency, the date, the standard and the certificate number of the whole vehicle audit.

**PERFORMANCE BOND NOT REQUESTED**

A performance bond will not be included. If requested at a later date, one will be provided to you for an additional cost and the following will apply:

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

The successful bidder will furnish a Performance and Payment bond (Bond) equal to 100 percent of the total contract amount within 30 days of the notice of award. Such Bond will be in a form acceptable to the Owner and issued by a surety company included within the Department of Treasury's Listing of Approved Sureties (Department Circular 570) with a minimum A.M. Best Financial Strength Rating of A and Size Category of XV. In the event of a bond issued by a surety of a lesser Size Category, a minimum Financial Strength rating of A+ is required.

Bidder and Bidder's surety agree that the Bond issued hereunder, whether expressly stated or not, also includes the surety's guarantee of the vehicle manufacturer's Bumper to Bumper warranty period included within this proposal. Owner agrees that the penal amount of this bond will be simultaneously amended to 25 percent of the total contract amount upon satisfactory acceptance and delivery of the vehicle(s) included herein. Notwithstanding anything contained within this contract to the contrary, the surety's liability for any warranties of any type will not exceed three (3) years from the date of such satisfactory acceptance and delivery, or the actual Bumper to Bumper warranty period, whichever is shorter.

Due to global supply chain constraints, any delivery date contained herein is a good faith estimate as of the date of this order/contract, and merely an approximation based on current information. Delivery updates will be made available, and a final firm delivery date will be provided as soon as possible.

If the Producer Price Index of Components for Manufacturing [www.bls.gov Series ID: WPUID6112] ("PPI") has increased at a compounded annual growth rate of 5.0% or more between the month Pierce accepts the order ("Order Month") and a month 14 months prior to the then predicted Ready For Pickup date ("Evaluation Month"), then pricing may be updated in an amount equal to the increase in PPI over 5.0% for each year or fractional year between the Order Month and the Evaluation Month.

The seller will document any such updated price for the customer's approval before proceeding and provide an option to cancel the order.

### **APPROVAL DRAWING**

A drawing of the proposed apparatus will be prepared and provided to the purchaser for approval before construction begins. The Pierce sales representative will also be provided with a copy of the same drawing. The finalized and approved drawing will become part of the contract documents. This drawing will indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus will be prepared and submitted by Pierce to the purchaser showing any changes made to the approval drawing.

### **ELECTRICAL WIRING DIAGRAMS**

Two (2) electrical wiring diagrams, prepared for the model of chassis and body, will be provided.

### **ENFORCER CHASSIS**

The Pierce Enforcer™ is the custom chassis developed exclusively for the fire service. Chassis provided will be a new, tilt-type custom fire apparatus. The chassis will be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis will be designed and

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

manufactured for heavy-duty service, with adequate strength, capacity for the intended load to be sustained, and the type of service required. The chassis will be the manufacturer's first line tilt cab.

**WHEELBASE**

The wheelbase of the vehicle will be 234".

**GVW RATING**

The gross vehicle weight rating will be 56,300#.

**FRAME**

The chassis frame will be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails will have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail will have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 in-lb over the rear axle. The frame rails will be constructed of 120,000 psi yield strength heat-treated 0.38" thick steel with 3.50" wide flanges.

**FRAME REINFORCEMENT**

In addition, a mainframe internal liner will be provided. The liner will be an internal "C" design that steps to an internal "L" design over the rear axle. It will be heat-treated steel measuring 12.50" x 3.00" x 0.25" through the front portion of the liner, stepping to 9.38" x 3.00" x 0.25" through the rear portion of the liner. Each liner will have a section modulus of 13.58 cubic inches, yield strength of 110,000 psi, and rbm of 1,494,042 in-lb. Total rbm at wheelbase center will be 4,391,869 in-lb.

The frame liner will be mounted inside of the chassis frame rail and extend the full length of the frame.

**FRONT NON DRIVE AXLE**

The Oshkosh TAK-4® front axle will be of the independent suspension design with a ground rating of 22,800 lb.

Upper and lower control arms will be used on each side of the axle. Upper control arm castings will be made of 100,000-psi yield strength 8630 steel and the lower control arm casting will be made of 55,000-psi yield ductile iron.

The center cross members and side plates will be constructed out of 80,000-psi yield strength steel.

Each control arm will be mounted to the center section using elastomer bushings. These rubber bushings will rotate on low friction plain bearings and be lubricated for life. Each bushing will also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations.

There will be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension.

The upper control arm will be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load.

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

Camber at load will be zero degrees for optimum tire life.

The ball joint bearing will be of low friction design and be maintenance free.

Toe links that are adjustable for alignment of the wheel to the center of the chassis will be provided.

The wheel ends will have little to no bump steer when the chassis encounters a hole or obstacle.

The steering linkage will provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase.

The axle will have a turning angle of up to 45 degrees.

### **FRONT SUSPENSION**

Front Oshkosh TAK-4™ independent suspension will be provided with a minimum ground rating of 22,800 lb.

The independent suspension system will be designed to provide maximum ride comfort. The design will allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment.

Each wheel will have torsion bar type spring. In addition, each front wheel end will also have energy absorbing jounce bumpers to prevent bottoming of the suspension.

The suspension design will be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms.

The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side.

The independent suspension was put through a durability test that simulated 140,000 miles of inner city driving.

### **FRONT SHOCK ABSORBERS**

KONI heavy-duty telescoping shock absorbers will be provided on the front suspension.

### **FRONT OIL SEALS**

Oil seals with viewing window will be provided on the front axle.

### **FRONT TIRES**

Front tires will be Goodyear 425/65R22.50 radials, 20 ply Armor Max MSA, rated for 22,800 lb maximum axle load and 68 mph maximum speed.

The tires will be mounted on Alcoa 22.50" x 12.25" polished aluminum disc type wheels with a ten (10) stud, 11.25" bolt circle.

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**REAR AXLE**

The rear axle will be a Meritor™, Model RS-30-185, with a capacity of 33,500 lb.

**TOP SPEED OF VEHICLE**

NFPA 1900 and ULC 515, 2024 edition requires limits on the top speed of vehicles. NFPA 7.16.1 requires that the maximum top speed of fire apparatus with a GVWR over 33,000 lb will not exceed either 68 mph or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower. NFPA 7.16.2 requires that if the combined water tank and foam agent tank on the fire apparatus exceed 1250 gallons or the GVWR of the vehicle is over 50,000 lb, the maximum top speed of the apparatus will not exceed either 60 mph or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower. It is the intention of the standard to improve safety by limiting the speed of all apparatus to 68 mph, and tankers or heavy apparatus to 60 mph. By requesting an exception to this requirement, the purchasing authority is consciously choosing to operate their apparatus at speeds above the limits designated as safe speeds by the NFPA Technical Committee on Fire Department Apparatus.

The top speed of the apparatus as manufactured exceeds the NFPA requirements. Per fire department specification of a top speed that exceeds NFPA requirements, the apparatus will be non-compliant to NFPA 1900 and ULC 515 standards at time of contract execution.

The rear tires being specified have a top speed limit of 68 mph / 109 kph from the tire manufacturer.

**REAR SUSPENSION**

The rear suspension will be Standens, semi-elliptical, 3.00" wide x 52.50" long, with a ground rating of 33,500 lb. The spring hangers will be castings.

The two (2) top leaves will wrap the forward spring hanger pin, and the rear of the spring will be a slipper style end that will ride in a rear slipper hanger.

A steel encased rubber bushing will be used in the spring eye. The steel encased rubber bushing will be maintenance free and require no lubrication.

**REAR OIL SEALS**

Oil seals will be provided on the rear axle(s).

**AUXILIARY SPRING**

The rear suspension will be furnished with a Timbren auxiliary spring package.

**REAR TIRES**

Rear tires will be four (4) Goodyear 315/80R22.50 radials with 20 ply G289 WHA tread, rated for 36,360 lb maximum axle load and 68 mph maximum speed.

The tires will be mounted on Accuride® 22.50" x 9.00" polished aluminum disc wheels with a ten (10) stud, 11.25" bolt circle.

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**TIRE BALANCE**

All tires will be balanced with Counteract balancing beads. The beads will be inserted into the tire and eliminate the need for wheel weights.

**TIRE PRESSURE MANAGEMENT**

There will be a RealWheels LED AirSecure™ tire alert pressure management system provided, that will monitor each tire's pressure. A sensor will be provided on the valve stem of each tire for a total of six (6) tires.

The sensor will calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi. The sensor will activate an integral battery operated LED when the pressure of that tire drops 5 to 8 psi.

Removing the cap from the sensor will indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED will immediately start to flash.

**CHROME LUG NUT COVERS**

Chrome plastic lug nut covers will be supplied on front and rear wheels.

**FRONT HUB COVERS**

Stainless steel hub covers will be provided on the front axle. An oil level viewing window will be provided.

**REAR HUB COVERS**

A pair of stainless steel high hat hub covers will be provided on rear axle hubs.

**MUD FLAPS**

Mud flaps with a Pierce logo will be installed behind the front and rear wheels.

**WHEEL CHOCKS**

There will be one (1) pair of Worden Safety Products, Model HWG-SB, wheel chocks provided.

Heavy Duty, large molded aluminum wheel chock with solid bottom, natural cast aluminum finish.

**Wheel Chock Brackets**

There will be one (1) pair of Worden Safety, Model U815T, mounting wheel chock brackets provided. The brackets will be mounted rear of driver side rear axle..

**ELECTRONIC STABILITY CONTROL**

A vehicle control system will be provided as an integral part of the ABS brake system from Meritor Wabco.

The system will monitor and update the lateral acceleration of the vehicle and compare it to a critical threshold where a side roll event may occur. If the critical threshold is met, the vehicle control system will automatically reduce engine RPM, engage the engine retarder (if equipped), and selectively apply

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brakes to the individual wheel ends of the front and rear axles to reduce the possibility of a side roll event.

The system will monitor directional stability through a lateral accelerometer, steer angle sensor and yaw rate sensor. If spinout or drift out is detected, the vehicle control system will selectively apply brakes to the individual wheel ends of the front and rear axles to bring the vehicle back to its intended direction.

**ANTI-LOCK BRAKE SYSTEM**

The vehicle will be equipped with a Wabco 4S4M, anti-lock braking system. The ABS will provide a four (4) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology will control the anti-lock braking system. Each wheel will be monitored by the system. When any wheel begins to lockup, a signal will be sent to the control unit. This control unit will then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system will eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

**AUTOMATIC TRACTION CONTROL**

An anti-slip feature will be included with the ABS. The Automatic Traction Control will be used for traction in poor road and weather conditions. The Automatic Traction Control will act as an electronic differential lock that will not allow a driving wheel to spin, thereby supplying traction at all times. The ABS electronic control unit (ECU) will work with the engine ECU, sharing information concerning wheel slip. Engine ECU will use information to control engine speed, allowing only as much throttle application as required for the available traction, regardless of how much the driver is asking for. An "off road traction" switch will be provided on the instrument panel. Activation of the switch will allow additional tire slip to let the truck climb out and get on top of deep snow or mud.

**BRAKES**

The service brake system will be full air type.

The front brakes will be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system will be certified, third party inspected, for improved stopping distance.

The rear brakes will be Meritor™ 16.50" x 8.63" cam operated with automatic slack adjusters. Dust shields cannot be provided.

**AIR COMPRESSOR, BRAKE SYSTEM**

The air compressor will be a Wabco single piston compressor with a 26.8 CI displacement.

**BRAKE SYSTEM**

The brake system will include:

- Brake treadle valve
- Heated automatic moisture ejector on air dryer
- Total air system minimum capacity of 5,376 cubic inches

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- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a push-pull style control valve
- A parking "brake on" indicator light on instrument panel
- Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, with an automatic spring brake application at 40 psi
- A pressure protection valve to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa)
- 1/4 turn drain valves on each air tank

The air tank will be primed and painted to meet a minimum 750 hour salt spray test.

The air tanks will be painted same as frame color.

To reduce the effects of corrosion, the air tank will be mounted with stainless steel brackets.

**BRAKE SYSTEM AIR DRYER**

The air dryer will be WABCO System Saver 1200 with spin-on coalescing filter cartridge and 100 watt heater.

**BRAKE LINES**

Color-coded nylon brake lines will be provided. The lines will be wrapped in a heat protective loom in the chassis areas that are subject to excessive heat.

**AIR INLET**

One (1) air inlet with 3D series male coupling will be provided. It will allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet will be located forward in the driver side lower step well of cab. A check valve will be provided to prevent reverse flow of air. The inlet will discharge into the "wet" tank of the brake system. A mating female fitting will also be provided with the loose equipment.

**ALL WHEEL LOCK-UP**

An additional all wheel lock-up system will be installed which applies air to the front brakes only. The standard spring brake control valve system will be used for the rear.

**ENGINE**

The chassis will be powered by an electronically controlled engine as described below:

Make:	Paccar
Model:	MX
Power:	510 hp at 1600rpm
Torque:	1850 lb-ft at 1000rpm
Governed Speed:	1900 rpm
Emissions	EPA 2027

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Certification:	
Fuel:	Diesel
Cylinders:	Six (6)
Displacement:	13.7L
Starter:	DP60
Fuel Filters:	Dual cartridge style with check valve, water separator, and water in fuel sensor

The engine will include On-board diagnostics (OBD), which provides self diagnostic and reporting. The system will give the owner or repair technician access to state of health information for various vehicle sub systems. The system will monitor vehicle systems, engine and after treatment. The system will illuminate a malfunction indicator light on the dash console if a problem is detected.

**HIGH IDLE**

A high idle switch will be provided, inside the cab, on the instrument panel, that will automatically maintain a preset engine rpm. A switch will be installed, at the cab instrument panel, for activation/deactivation.

The high idle will be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light will be provided, adjacent to the switch. The light will illuminate when the above conditions are met. The light will be labeled "OK to Engage High Idle."

**ENGINE BRAKE**

The compression release brake option is a fully integrated MX engine braking system. It utilizes the turbocharger and back pressure valve, but adds in a hydraulically operated compression brake to increase overall retarding power.

To maximize the effectiveness of the compression brake the MX engine brake system works in conjunction with the turbocharger and back pressure valve.

The driver will be able to turn the engine brake system on/off and have a high, medium and low setting.

**CLUTCH FAN**

A fan clutch will be provided. The fan clutch will be automatic when the pump transmission is in "Road" position, and constantly engaged when in "Pump" position.

**ENGINE AIR INTAKE**

The engine air intake will be located above the engine cooling package. It will draw fresh air from the front of the apparatus through the radiator grille.

A stainless steel metal screen will be installed at the inlet of the air intake system that will meet current edition of applicable NFPA standards.

The air cleaner and stainless steel screen will be easily accessible by tilting the cab.

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**EXHAUST SYSTEM**

The exhaust system will be stainless steel from the turbo to the engine's aftertreatment device. The exhaust system will include an aftertreatment device to meet current EPA standards. An insulation wrap will be provided on all exhaust pipe between the turbo and the aftertreatment device to minimize the transfer of heat to the cab.

The exhaust will terminate horizontally ahead of the right side rear wheels and will be flush with the body rub rail. The exhaust pipes will be aluminized steel.

There will be an aluminized steel exhaust diffuser with a standard straight tip on the end provided to reduce the temperature of the exhaust as it exits. Heat deflector shields will be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

**RADIATOR**

The radiator and the complete cooling system will meet or exceed the current edition of applicable NFPA and engine manufacturer cooling system standards.

For maximum corrosion resistance and cooling performance, the entire radiator core will be constructed using long life aluminum alloy. The radiator core will consist of aluminum fins, having a serpentine design, brazed to aluminum tubes.

The radiator core will have a minimum front area of 1060 square inches.

Supply tank will be made of heavy duty glass-reinforced nylon and the return tank will be made of aluminum. Both tanks will be crimped onto the core assembly using header tabs and a compression gasket to complete the radiator core assembly. There will be a full steel frame around the inserts to enhance cooling system durability and reliability.

The radiator will be compatible with commercial antifreeze solutions.

The radiator assembly will be isolated from the chassis frame rails with rubber isolators to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven terrain.

The radiator will include a de-aeration/expansion tank. For visual coolant level inspection, the radiator will have a built-in sight glass. The radiator will be equipped with a 15 psi pressure relief cap.

A drain port will be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

Shields or baffles will be provided to prevent recirculation of hot air to the inlet side of the radiator.

**COOLANT LINES**

Gates, or Goodyear, rubber hose will be used for all engine coolant lines installed by Pierce Manufacturing.

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Hose clamps will be stainless steel constant torque type to prevent coolant leakage. They will expand and contract according to coolant system temperature thereby keeping a constant clamping pressure on the hose.

**FUEL TANK**

A 65 gallon fuel tank will be provided and mounted at the rear of the chassis. The tank will be constructed of 12-gauge, hot rolled steel. It will be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank will be mounted with stainless steel straps.

A 0.75" drain plug will be located in a low point of the tank for drainage.

A fill inlet will be located on the left hand side of the body and is covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only."

A 0.50" diameter vent will be installed from tank top to just below fuel fill inlet.

The fuel tank will meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume.

All fuel lines will be provided as recommended by the engine manufacturer.

**DIESEL EXHAUST FLUID TANK**

A 7.3 gallon diesel exhaust fluid (DEF) tank will be provided and mounted under the cab on the driver's side.

A fill inlet will be provided on the driver's side of the cab. The door will be vertically hinged and secured by a SouthCo M1 medium stainless steel compression latch and be painted.

The tank will meet the engine manufacturers requirement for 10 percent expansion space in the event of tank freezing.

The tank will include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

**FUEL FILL DOOR**

Fuel fill door will be painted job color.

**TRANSMISSION**

An Allison 6th generation, Model EVS 4000P, electronic, torque converting, automatic transmission will be provided.

The transmission will be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display will indicate when service is due.

Two (2) PTO openings will be located on left side and top of converter housing (positions 8 o'clock and 1 o'clock).

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A transmission temperature gauge with an amber light and buzzer will be installed on the cab instrument panel.

**TRANSMISSION SHIFTER**

A six (6)-speed push button shift module will be mounted to right of driver on console. Shift position indicator will be indirectly lit for after dark operation.

The transmission ratio will be:

1st	3.51 to 1.00
2nd	1.91 to 1.00
3rd	1.43 to 1.00
4th	1.00 to 1.00
5th	0.75 to 1.00
6th	0.64 to 1.00
R	4.80 to 1.00

**TRANSMISSION COOLER**

A Modine plate and fin transmission oil cooler will be provided using engine coolant to control the transmission oil temperature.

**DRIVELINE**

Drivelines will be a heavy-duty metal tube and be equipped with Spicer® 1810 universal joints.

The shafts will be dynamically balanced before installation.

A splined slip joint will be provided in each driveshaft where the driveline design requires it. The slip joint will be coated with Glidecoat® or equivalent.

**STEERING**

Dual Sheppard, Model M110, steering gears, with integral heavy-duty power steering, will be provided. For reduced system temperatures, the power steering will incorporate an air to oil cooler and Paccar hydraulic pump with integral pressure and flow control. All power steering lines will have wire braded lines with crimped fittings.

A tilt and telescopic steering column will be provided to improve fit for a broader range of driver configurations.

**STEERING WHEEL**

The steering wheel will be 18.00" in diameter, have tilting and telescoping capabilities, and a four (4)-spoke design.

There will be a switch pod provided on the left side of the steering wheel between the spokes. The switch pods will be an integral part of the steering wheel.

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The following switches will be provided:

- Windshield wash
- Wiper intermittent speed increase
- Wiper intermittent speed decrease
- Hi/Lo wiper speed
- Wiper off

**BUMPER**

A one (1)-piece bumper manufactured from 0.25" formed steel with a 0.38" bend radius will be provided. The bumper will be a minimum of 10.00" high with a 1.50" top and bottom flange, and will extend 19.00" from the face of the cab. The bumper will be 95.28" wide with 45 degree corners and side plates.

To provide adequate support strength, the bumper will be mounted directly to the front of the C channel frame. The frame will be a bolted modular extension frame constructed of 50,000 psi tensile steel.

The bumper will be metal finished and painted to match the lower job color of the apparatus.

**Gravel Pan**

A gravel pan, constructed of bright aluminum treadplate, will be furnished between the bumper and the cab face. The pan will be properly supported from the underside to prevent flexing and vibration.

**CENTER HOSE TRAY**

A hose tray, constructed of aluminum, will be placed in the center of the bumper extension.

The tray will have a capacity of 125' of 1.75" double jacket cotton-polyester hose.

Black rubber grating will be provided at the bottom of the tray. Drain holes are also provided.

**Center Hose Tray Cover**

A bright aluminum treadplate cover will be provided over the center hose tray.

The cover will be attached with a stainless steel hinge.

One (1) D-ring latch will secure the cover in the closed position and a pneumatic stay arm will hold the cover in the open position.

**TOW HOOKS**

Two (2) chromed steel tow hooks will be installed under the bumper and attached to the front frame members. The tow hooks will be designed and positioned to allow up to a 6,000 lb straight horizontal pull in line with the centerline of the vehicle. The tow hooks will not be used for lifting of the apparatus.

**FRONT BUMPER UL-LX COATING**

Protective black UL-LX® coating will be provided on the outside exterior of the top front bumper flange. It will not be sprayed on the underside of the flange.

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The lining will be properly installed by an authorized UL-LX dealer.

**CAB**

The Enforcer cab will be designed specifically for the fire service and manufactured by the chassis builder.

The cab will be built by the apparatus manufacturer in a facility located on the manufacturer's premises.

For reasons of structural integrity and enhanced occupant protection, the cab will be a heavy duty design, constructed to the following minimal standards.

The cab will have 12 main vertical structural members located in the A-pillar (front cab corner posts), B-pillar (side center posts), C-pillar (rear corner posts), and rear wall areas. The A-pillar will be constructed of solid A356-T5 aluminum castings. The B-pillar and C-pillar will be constructed from 0.13" wall extrusions. The rear wall will be constructed of two (2) 2.00" x 2.00" outer aluminum extrusions and two (2) 2.00" x 1.00" inner aluminum extrusions. All main vertical structural members will run from the floor to 4.625" x 3.864" x 0.090" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.25" thick corner casting at each of the front corners of the roof assembly.

The front of the cab will be constructed of a 0.13" firewall plate, covered with a minimum 0.090" front skin thickness, and reinforced with a full width x 0.50" thick cross-cab support located just below the windshield and fully welded to the engine tunnel. The cross-cab support will run the full width of the cab and weld to each A-pillar, the 0.13" firewall plate, and the front skin.

The cab floors will be constructed of 0.125" thick aluminum plate and reinforced at the firewall with an additional 0.375" thick cross-floor support providing a total thickness of 0.50" of structural material at the front floor area. The front floor area will also be supported with two (2) triangular 0.30" wall extrusions that also provides the mounting point for the cab lift. This tubing will run from the floor wireway of the cab to the engine tunnel side plates, creating the structure to support the forces created when lifting the cab.

The cab will be 96.00" wide (outside door skin to outside door skin) to maintain maximum maneuverability.

The centerline of front axle to the rear of the cab will be 70.00" long.

The forward cab section will have an overall height (from the cab roof to the ground) of approximately 99.00". The crew cab section will have a 10.00" raised roof, with an overall cab height of approximately 109.00". The overall height listed will be calculated based on a truck configuration with the lowest suspension weight rating, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension will increase the overall height listed.

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The raised roof section of the crew cab will have a 58.00" wide x 10.00" high square notch in the center section of the roof. This will allow the aerial device to be bedded in the same location as a non-raised roof.

The floor to ceiling height inside the crew cab will be 54.50" in the center position and 64.50" in the outboard positions.

The crew cab floor will measure 46.00" from the rear wall to the back side of the rear facing seat risers.

The medium block engine tunnel, at the rearward highest point (knee level), will measure 61.50" to the rear wall. The big block engine tunnel will measure between 45.00" and 51.50" to the rear wall.

The crew cab will be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.

The cab will be a full tilt cab style.

A 3-point cab mount system with rubber isolators will improve ride quality by isolating chassis vibrations from the cab.

#### **CAB ROOF DRIP RAIL**

For enhanced protection from inclement weather, a drip rail will be furnished on the sides of the cab. The drip rail will be painted to match the cab roof, and bonded to the sides of the cab. The drip rail will extend the full length of the cab roof.

#### **FENDER LINERS**

Full circular inner fender liners in the wheel wells will be provided.

#### **PANORAMIC WINDSHIELD**

A one (1)-piece safety glass windshield will be provided with over 2,775 square inches of clear viewing area. The windshield will be full width and will provide the occupants with a panoramic view. The windshield will consist of three (3) layers: outer light, middle safety laminate, and inner light. The outer light layer will provide superior chip resistance. The middle safety laminate layer will prevent the windshield glass pieces from detaching in the event of breakage. The inner light will provide yet another chip resistant layer. The cab windshield will be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern will be applied on the outside perimeter of the windshield for a finished automotive appearance.

#### **WINDSHIELD WIPERS**

Three (3) electric windshield wipers with washer will be provided that meet FMVSS and SAE requirements.

The washer reservoir will be able to be filled without raising the cab.

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**ENGINE TUNNEL**

Engine tunnel side walls will be constructed of 0.375" aluminum. The top will be constructed of 0.125" aluminum and will be tapered at the top to allow for more driver and passenger elbow room.

The engine tunnel will be insulated for protection from heat and sound. Perforated foil faced insulation will be over a closed cell foam affixed with pressure sensitive adhesive and further secured with mechanical fasteners. The noise insulation keeps the dBA level within the limits stated in the current edition of applicable NFPA standards.

The engine tunnel will be no higher than 17.00" off the crew cab floor.

**INSULATION PACKAGE**

All insulation utilized in the cab construction will be provided for extreme climate temperatures. The insulation will be provided in the following areas:

- Engine tunnel
- Cab and crew cab floors
- Cab and crew cab doors
- Cab roof
- Cab and crew cab walls

**INTERIOR CREW CAB REAR WALL ADJUSTABLE SEATING (PATENT PENDING)**

The interior rear wall of the crew cab will have mounting holes every 2.75" to allow for adjustability of the forward facing crew cab seating along the rear wall. Seats will be adjustable with use of simple hand tools allowing departments flexibility of their seating arrangement should their department needs change.

**CAB REAR WALL EXTERIOR COVERING**

The exterior surface of the rear wall of the cab will be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered.

**CAB LIFT**

A hydraulic cab lift system will be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.

Lift controls will be located on the right side pump panel or front area of the body in a convenient location.

The cab will be capable of tilting 43 degrees to accommodate engine maintenance and removal.

The cab will be locked down by a 2-point normally closed spring loaded hook type latch that fully engages after the cab has been lowered. The system will be hydraulically actuated to release the normally closed locks when the cab lift control is in the raised position and cab lift system is under pressure. When the cab is completely lowered and system pressure has been relieved, the spring loaded latch mechanisms will return to the normally closed and locked position.

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The hydraulic cylinders will be equipped with a velocity fuse that protects the cab from accidentally descending when the control is located in the tilt position.

For increased safety, a redundant mechanical stay arm will be provided that must be manually put in place on the left side between the chassis and cab frame when the cab is in the raised position. This device will be manually stowed to its original position before the cab can be lowered.

**Cab Lift Interlock**

The cab lift system will be interlocked to the parking brake. The cab tilt mechanism will be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism will be disabled.

**GRILLE**

A bright finished aluminum mesh grille screen, inserted behind a bright finished grille surround, will be provided on the front center of the cab.

**SIDE OF CAB MOLDING**

Chrome molding will be provided on both sides of cab.

**MIRRORS**

A Retrac, dual vision, motorized, west coast style mirror, with chrome finish, will be mounted on each side of the front cab door with spring loaded retractable arms. The flat glass and convex glass will be heated and adjustable with remote control within reach of the driver.

An amber marker light will be provided on each mirror head.

**DOORS**

To enhance entry and egress to the cab, the forward cab door openings will be a minimum of 37.50" wide x 63.37" high. The crew cab doors will be located on the sides of the cab and will be constructed in the same manner as the forward cab doors. The crew cab door openings will be a minimum of 34.30" wide x 73.25" high.

The forward cab and crew cab doors will be constructed of extruded aluminum with a nominal material thickness of 0.093". The exterior door skins will be constructed from 0.090" aluminum.

A customized, vertical, pull-down type door handle will be provided on the exterior of each cab door. The finish of the door handle will be chrome/black. The exterior handle will be designed specifically for the fire service to prevent accidental activation, and will provide 4.00" wide x 2.00" deep hand clearance for ease of use with heavy gloved hands.

Each door will also be provided with an interior flush, open style paddle handle that will be readily operable from fore and aft positions, and be designed to prevent accidental activation. The interior handles will provide 4.00" wide x 1.25" deep hand clearance for ease of use with heavy gloved hands.

The cab doors will be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The keys will be Model 751. The locks will be capable of activating when the doors

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are open or closed. The doors will remain locked if locks are activated when the doors are opened, then closed.

A full length, heavy duty, stainless steel, piano-type hinge with a 0.38" pin and 11 gauge leaf will be provided on all cab doors. There will be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

A chrome grab handle will be provided on the inside of each cab door for ease of entry.

A red webbed grab handle will be installed on the crew cab door stop strap. The grab handles will be securely mounted.

The bottom cab step at each cab door location will be located below the cab doors and will be exposed to the exterior of the cab.

### **Door Panels**

The inner cab door panels will be constructed out of brushed stainless steel.

### **ELECTRIC OPERATED CAB DOOR WINDOWS**

All four (4) cab doors will be equipped with electric operated windows with one (1) flush mounted automotive style switch on each door. The driver's door will have four (4) switches, one (1) to control each door window.

Each switch will allow intermittent or auto down operation for ease of use. Auto down operation will be actuated by holding the window down switch for approximately 1 second.

### **CAB STEPS**

A dual step will be provided below each cab and crew cab door. The steps will be designed with a grip pattern punched into bright aluminum treadplate material providing support, slip resistance, and drainage. The steps will be a bolt-in design to minimize repair costs should they need to be replaced. The forward cab steps will be a minimum 25.00" wide, and the crew cab steps will be 21.50" wide with a 7.00" minimum depth. The step design raises the middle step higher and closer to the cab floor, resulting in a 12.50" distance from the step to cab floor in the cab and a 10.25" distance from the step to cab floor in the crew cab. Stepping distances from the ground to first step will be approximately 14.00" and from first step to middle step will be approximately 12.00".

The vertical surface of the upper step well will be aluminum treadplate.

The first step will be lit by a white 12 volt DC LED light provided on the step.

### **CAB EXTERIOR HANDRAILS**

A 1.25" diameter slip-resistant, knurled aluminum handrail will be provided adjacent to each cab and crew cab door opening to assist during cab ingress and egress.

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**STEP LIGHTS**

There will be six (6) white LED step lights with chrome housing installed for cab and crew cab access steps.

- One (1) light for the left side cab access steps.
- Two (2) lights for the left side crew cab access steps.
- Two (2) lights for the right side crew cab access steps.
- One (1) light for the right side cab access step.

In order to ensure exceptional illumination, each light will provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The lights will be activated when the battery switch is on and the adjacent door is opened.

**FENDER CROWNS**

Stainless steel fender crowns will be installed at the cab wheel openings.

**HANDRAILS BELOW CAB WINDSHIELD**

A 10.00" long x 1.25" diameter handrail will be mounted below the front cab windshield, one (1) on each side. The handrails will be extruded aluminum with a ribbed design to provide a positive gripping surface.

**GRAB HANDLE(S)**

There will be two (2) chrome grab handle(s) mounted in the interior of the cab one (1) on the driver and one (1) on the officer side door pan vertical near the upper door panel hinged side, to work as a high grab handle into cab.. The grab handle(s) will be securely mounted.

**CREW CAB WINDOWS**

One (1) fixed window with tinted glass will be provided on each side of the cab, to the rear of the front cab door. The windows will be sized to enhance light penetration into the cab interior. The windows will measure 18.70" wide x 23.75" high with chrome window trim.

**WINDOW COATINGS**

All cab and crew cab windows will have solar window film applied. The solar film will block UV rays and excess heat while not impacting the visibility or clarity of the window.

**CAB DASH**

The driver side dash, switch panel located to the right of the driver, and center console will be constructed of metal and painted to match the cab interior.

The officer side dash will be a flat top design with an upper beveled edge to provide easy maintenance and will be constructed out of aluminum and painted to match the cab interior.

The instrument gauge cluster will be surrounded with a high impact ABS plastic contoured to the same shape of the instrument gauge cluster.

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**MOUNTING PLATE ON ENGINE TUNNEL**

Equipment installation provisions will be installed on the engine tunnel.

A 0.188" smooth aluminum plate will be bolted to the top surface of the engine tunnel. The plate will follow the contour of the engine tunnel and will run the entire length of the engine tunnel. The plate will be spaced off the engine tunnel 1.00" to allow for wire routing below the plate.

The mounting surface will be painted to match the cab interior.

**CAB INTERIOR**

The cab interior will be constructed of primarily metal (painted aluminum) to withstand the severe duty cycles of the fire service.

The engine tunnel will be padded and covered, on the top and sides, with dark silver gray 36 ounce leather grain vinyl resistant to oil, grease, and mildew.

For durability and ease of maintenance, the cab interior side walls will be painted aluminum. The rear wall will be painted aluminum.

The headliner will be installed in both forward and rear cab sections. Headliner material will be vinyl. A sound barrier will be part of its composition. Material will be installed on an aluminum sheet and securely fastened to interior cab ceiling.

The forward portion of the cab headliner will permit easy access for service of electrical wiring or other maintenance needs.

All wiring will be placed in metal raceways.

**CAB INTERIOR UPHOLSTERY**

The cab interior upholstery will be 36 oz dark silver gray vinyl.

**CAB INTERIOR PAINT**

The cab interior metal surfaces, excluding the rear heater panels, will be painted fire smoke gray, vinyl texture paint.

The rear heater panels will be painted black, vinyl textured paint.

**CAB FLOOR**

The cab and crew cab floor areas will be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.

The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a 0.25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels.

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**DEFROST/AIR CONDITIONING SYSTEM**

A ceiling mounted combination heater, defroster and air conditioning system will be installed in the cab above the engine tunnel area.

**Cab Defroster**

A 54,000 BTU heater-defroster unit with 690 SCFM of air flow will be provided inside the cab. The heater-defrost will be installed in the forward portion of the cab ceiling. Air outlets will be strategically located in the cab header extrusion per the following:

- One (1) adjustable will be directed towards the left side cab window
- One (1) adjustable will be directed towards the right side cab window
- Six (6) fixed outlets will be directed at the windshield

The defroster will be capable of clearing 98 percent of the windshield and side glass when tested under conditions where the cab has been cold soaked at 0 degrees Fahrenheit for 10 hours, and a 2 ounce per square inch layer of frost/ice has been able to build up on the exterior windshield. The defroster system will meet or exceed SAE J382 requirements.

**Cab/Crew Auxiliary Heater**

There will be one (1) 31,000 BTU auxiliary heater with 560 SCFM of air flow provided in each outboard rear facing seat riser with a dual scroll blower. An aluminum plenum incorporated into the cab structure to be used to transfer heat to the forward positions.

**Air Conditioning**

A 13.10 cubic inch compressor will be installed on the engine.

A roof-mounted condenser with a 78,000 BTU output at 2,400 SCFM that meets and exceeds the performance specification will be installed on the cab roof. Mounting the condenser below the cab or body would reduce the performance of the system and will not be acceptable. The condenser cover to be painted to match the cab roof.

The air conditioning system will be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 75 degrees Fahrenheit at 50 percent relative humidity within 30 minutes. The cooling performance test will be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours.

The evaporator unit will be installed in the rear portion of the cab ceiling over the engine tunnel. The evaporator will include one (1) high performance heating core, one (1) high performance cooling core with (1) plenum directed to the front and one (1) plenum directed to the rear of the cab. The rear plenum will be covered with a formed plastic cover.

The evaporator unit will have a 52,000 BTU at 690 SCFM rating that meets and exceeds the performance specifications.

Adjustable air outlets will be strategically located on the forward plenum cover per the following:

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- Four (4) will be directed towards the seating position on the left side of the cab
- Four (4) will be directed towards the seating position on the right side of the cab

Adjustable air outlets will be strategically located on the rear plenum cover per the following:

- Minimum of five (5) will be directed towards crew cab area

A high efficiency particulate air (HEPA) filter will be included for the system. Access to the filter cover will be secured with four (4) screws.

The air conditioner refrigerant will be R-134A and will be installed by a certified technician.

### **Climate Control**

An automotive style controller will be provided to control the heat and air conditioning system within the cab. The controller will have three (3) functional knobs for fan speed, temperature, and air flow distribution (front to rear) control.

The system will control the temperature of the cab and crew cab automatically by pushing the center of the fan speed control knob. Rotate the center temperature control knob to set the cab and crew cab temperature.

The AC system will be manually activated by pushing the center of the temperature control knob. Pushing the center of the air flow distribution knob will engage the AC for max defrost, setting the fan speeds to 100 percent and directing all air flow to the overhead forward position.

The system controller will be located within panel position #12.

### **Gravity Drain Tubes**

Two (2) condensate drain tubes will be provided for the air conditioning evaporator. The drip pan will have two (2) drain tubes plumbed separately to allow for the condensate to exit the drip pan. No pumps will be provided.

### **SUN VISORS**

Two (2) smoked Lexan™ sun visors will be provided. The sun visors will be located above the windshield with one (1) mounted on each side of the cab.

There will be a black plastic thumb latch provided to help secure each sun visor in the stowed position.

### **GRAB HANDLE**

A black rubber covered grab handle will be mounted on the door post of the driver and officer's side cab door to assist in entering the cab. The officer's side grab handle will be mounted on the lower portion of the door post. The grab handle will be securely mounted to the post area between the door and windshield.

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**ENGINE COMPARTMENT LIGHTS**

There will be one (1) Whelen®, Model 3SC0CDCR, 12 volt DC, 3.00" white LED light(s) with Model 3FLANGEC, chrome flange kit(s) installed under the cab to be used as engine compartment illumination.

These light(s) will be activated automatically when the cab is raised or when the dip stick door is opened.

**ACCESS TO ENGINE DIPSTICKS**

For access to the engine oil and transmission fluid dipsticks, there will be a door on the engine tunnel, inside the crew cab. The door will be on the rear wall of the engine tunnel, on the vertical surface.

The engine oil dipstick will allow for checking only. The transmission dipstick will allow for both checking and filling.

The door will have a rubber seal for thermal and acoustic insulation. One (1) flush lift and turn latch will be provided on the access door.

**CAB SAFETY SYSTEM**

The cab will be provided with a safety system designed to protect occupants in the event of a side roll or frontal impact, and will include the following:

- A supplemental restraint system (SRS) sensor will be installed on a structural cab member behind the instrument panel. The SRS sensor will perform real time diagnostics of all critical subsystems and will record sensory inputs immediately before and during a side roll or frontal impact event.
- A slave SRS sensor will be installed in the cab to provide capacity for eight (8) crew cab seating positions.
- A fault-indicating light will be provided on the vehicle's instrument panel allowing the driver to monitor the operational status of the SRS system.
- A driver side front air bag will be mounted in the steering wheel and will be designed to protect the head and upper torso of the occupant, when used in combination with the 3-point seat belt.
- A passenger side knee bolster air bag will be mounted in the modesty panel below the dash panel and will be designed to protect the legs of the occupant, when used in combination with the 3-point seat belt.
- Air curtains will be provided in the outboard bolster of outboard seat backs to provide a cushion between occupant and the cab wall.
- Suspension seats will be provided with devices to retract them to the lowest travel position during a side roll or frontal impact event.
- Seat belts will be provided with pre-tensioners to remove slack from the seat belt during a side roll or frontal impact event.

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**Frontal Impact Protection**

The SRS system will provide protection during a frontal or oblique impact event. The system will activate when the vehicle decelerates at a predetermined G force known to cause injury to the occupants. The cab and chassis will have been subjected, via third party test facility, to a crash impact during frontal and oblique impact testing. Testing included all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspensions components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body mounts. The testing provided configuration specific information used to optimize the timing for firing the safety restraint system. The sensor will activate the pyrotechnic devices when the correct crash algorithm, wave form, is detected.

The SRS system will deploy the following components in the event of a frontal or oblique impact event:

- Driver side front air bag
- Passenger side knee bolster air bag
- Air curtains mounted in the outboard bolster of outboard seat backs
- Suspension seats will be retracted to the lowest travel position
- Seat belts will be pre-tensioned to firmly hold the occupant in place

**Side Roll Protection**

The SRS system will provide protection during a fast or slow 90 degree roll to the side, in which the vehicle comes to rest on its side. The system will analyze the vehicle's angle and rate of roll to determine the optimal activation of the advanced occupant restraints.

The SRS system will deploy the following components in the event of a side roll:

- Air curtains mounted in the outboard bolster of outboard seat backs
- Suspension seats will be retracted to the lowest travel position
- Seat belts will be pre-tensioned to firmly hold the occupant in place

**SEATING CAPACITY**

The seating capacity of the vehicle (including tiller cab and belted seat positions in the rescue body) will be six (6).

**DRIVER SEAT**

A seat will be provided in the cab for the driver. The seat design will be a cam action type, with air suspension. For increased convenience, the seat will include a manual control to adjust the horizontal position (6.00" travel). The manual horizontal control will be a towel-bar style located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat will have an adjustable reclining back. The seat back will be a high back style with side bolster pads for maximum support. For optimal comfort, the seat will be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat will include the following features incorporated into the side roll protection system:

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- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A suspension seat safety system will be included. When activated in the event of a side roll, this system will pretension the seat belt and retract the seat to its lowest travel position.

The seat will be furnished with a 3-point, shoulder type seat belt.

**OFFICER SEAT**

A seat will be provided in the cab for the passenger. The seat will be a fixed type, with no suspension. For optimal comfort, the seat will be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back will be an SCBA back style with 95 degree fixed recline angle. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt.

The seat will be furnished with a 3-point, shoulder type seat belt.

**RADIO COMPARTMENT**

A radio compartment will be provided under the officer's seat.

The inside compartment dimensions will be 14.00" wide x 7.50" high x 15.00" deep, with the back of the compartment angled up to match the cab structure.

A drop-down door with one (1) flush lift and turn latch will be provided for access.

The compartment will be constructed of smooth aluminum and painted to match the cab interior.

**REAR FACING DRIVER SIDE OUTBOARD SEAT**

There will be one (1) rear facing seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat will be provided with 15.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back will be an SCBA back style with 95 degree fixed recline angle. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

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- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt.

The seat will be furnished with a 3-point, shoulder type seat belt.

**REAR FACING PASSENGER SIDE OUTBOARD SEAT**

There will be one (1) rear facing seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat will be provided with 15.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back will be an SCBA back style with 95 degree fixed recline angle. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt.

The seat will be furnished with a 3-point, shoulder type seat belt.

**FORWARD FACING DRIVER SIDE OUTBOARD SEAT**

There will be one (1) forward facing, foldup seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat will be a minimum of 15.00" from the front of the cushion to the face of the seat back and designed with EVC (elastomeric vibration control).

The seat back will be an SCBA style with 90 degree back. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

The seat will be furnished with a 3-point, shoulder type seat belt.

**FORWARD FACING CENTER CABINET**

A forward facing cabinet will be provided in the crew cab at the center position.

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The cabinet will be 38.50" wide x 50.00" high x 28.00" deep with one (1) Amdor rollup door with anodized finish, locking with #751 key. The frame to frame opening of the cabinet will be 36.00" wide x 44.75" high. The minimum clear door opening will be 33.25" wide x 38.87" high.

The cabinet will include two (2) infinitely adjustable shelves with a 0.75" up-turned lip painted to match the cab interior.

The cabinet will include no louvers.

The cabinet will be constructed of smooth aluminum, and painted to match the cab interior.

### **Cabinet Light**

There will be one (1) white LED strip light installed on the left side of the interior cabinet door opening and one (1) white LED strip light installed on the right side of the interior cabinet door opening. The lighting will be controlled by an automatic door switch.

### **FORWARD FACING PASSENGER SIDE OUTBOARD SEAT**

There will be one (1) forward facing, foldup seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat will be a minimum of 15.00" from the front of the cushion to the face of the seat back and designed with EVC (elastomeric vibration control).

The seat back will be an SCBA style with 90 degree back. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

The seat will be furnished with a 3-point, shoulder type seat belt.

### **SEAT UPHOLSTERY**

All seat upholstery will be leather grain 36 oz dark silver gray vinyl resistant to oil, grease and mildew. The cab and tiller cab (if applicable) will have six (6) seating positions.

### **AIR BOTTLE HOLDERS**

All SCBA type seats in the cab will have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket will include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp will constrain the SCBA bottle in the seat and will exceed the NFPA standard of 9G.

There will be a quantity of five (5) SCBA brackets.

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**SEAT BELTS**

All cab and tiller cab (if applicable) seating positions will have red seat belts. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length will meet or exceed the current edition of applicable NFPA and CAN/ULC - S515 standards.

The 3-point shoulder type seat belts will include height adjustment. This adjustment will optimize the belts effectiveness and comfort for the seated firefighter. The 3-point shoulder type seat belts will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

The 3-point shoulder type belts will also include the ReadyReach® D-loop assembly to the shoulder belt system. The ReadyReach feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location.

Any flip up seats will include a 3-point shoulder type belts only.

To ensure safe operation, the seats will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

**HELMET STORAGE PROVIDED BY FIRE DEPARTMENT**

NFPA 1900, 2024 edition, section 11.1.8.4.1 and CAN/ULC 515:2024 edition, section 5.2, requires a location for helmet storage be provided.

There is no helmet storage on the apparatus as manufactured. The fire department will provide a location for storage of helmets.

**CAB DOME LIGHTS**

There will be four (4) dual LED dome lights with black bezels provided. Two (2) lights will be mounted above the inside shoulder of the driver and officer and two (2) lights will be installed and located, one (1) on each side of the crew cab.

The color of the LED's will be red and white.

The white LED's will be controlled by the door switches and the lens switch.

The color LED's will be controlled by the lens switch.

All dome lights on the apparatus will be illuminated per the current edition of applicable NFPA standards per seating position.

**ENHANCED SOFTWARE FOR CAB AND CREW CAB DOME LIGHTS**

The cab and crew cab dome lights will remain on for 10 seconds for improved visibility after the doors are closed.

The dome lights will dim after 10 seconds or immediately if the vehicle's transmission is put into gear.

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**PORTABLE HAND LIGHTS PROVIDED BY FIRE DEPARTMENT**

The hand lights are not on the apparatus as manufactured. The fire department will provide and mount these hand lights.

**CAB INSTRUMENTATION**

The cab instrument panel include gauges, an LCD display, telltale indicator lamps, control switches, alarms, and a diagnostic panel. The function of the instrument panel controls and switches will be identified by a label adjacent to each item. Actuation of the headlight switch will illuminate the labels in low light conditions. Telltale indicator lamps will not be illuminated unless necessary. The cab instruments and controls will be conveniently located within the forward cab section, forward of the driver. The gauge assembly and switch panels are designed to be removable for ease of service and low cost of ownership.

**Gauges**

The gauge panel will include the following ten (10) black faced gauges with black bezels to monitor vehicle performance:

- Voltmeter gauge (volts):
  - Low volts (11.8 VDC)
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
  - High volts (15.5 VDC)
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
  - Very low volts (11.3 VDC)
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
  - Very high volts (16.0 VDC)
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
- Engine Tachometer (RPM)
- Speedometer MPH (Major Scale), KM/H (Minor Scale)
- Fuel level gauge (Empty - Full in fractions):
  - Low fuel (1/8 full)
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
  - Very low fuel (1/32 full)
    - Red caution indicator on the information center with steady alarm
    - Amber caution light on gauge assembly
- Engine Oil pressure Gauge (PSI):
  - Low oil pressure to activate engine warning lights and alarms
    - Red caution indicator on the information center with steady alarm
    - Amber caution light on gauge assembly

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- Front Air Pressure Gauges (PSI):
  - Low air pressure to activate warning lights and alarm
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
- Rear Air Pressure Gauges (PSI):
  - Low air pressure to activate warning lights and alarm
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
- Transmission Oil Temperature Gauge (Fahrenheit):
  - High transmission oil temperature activates warning lights and alarm
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
- Engine Coolant Temperature Gauge (Fahrenheit):
  - High engine temperature activates an engine warning light and alarms
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
- Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions):
  - Low fluid (1/8 full)
    - Amber indicator light in gauge dial

All gauges will perform prove out at initial power-up to ensure proper performance.

### **Indicator Lamps**

To promote safety, the following telltale indicator lamps will be located on the instrument panel in clear view of the driver. The indicator lamps will be "dead-front" design that is only visible when active. The colored indicator lights will have descriptive text or symbols.

The following amber telltale lamps will be present:

- Low coolant
- Trac cntl (traction control) (where applicable)
- Check engine
- Check trans (check transmission)
- Aux brake overheat (Auxiliary brake overheat)
- Air rest (air restriction)
- Caution (triangle symbol)
- Water in fuel
- DPF (engine diesel particulate filter regeneration)
- Trailer ABS (where applicable)
- Wait to start (where applicable)
- HET (engine high exhaust temperature) (where applicable)
- ABS (antilock brake system)
- MIL (engine emissions system malfunction indicator lamp) (where applicable)

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- Side roll fault (where applicable)
- Front air bag fault (where applicable)

The following red telltale lamps will be present:

- Warning (stop sign symbol)
- Seat belt
- Parking brake
- Stop engine
- Rack down

The following green telltale lamps will be provided:

- Left turn
- Right turn
- Battery on

The following blue telltale lamp will be provided:

- High beam

### **Alarms**

**Audible steady tone warning alarm:** A steady audible tone alarm will be provided whenever a warning message is present.

**Audible pulsing tone caution alarm:** A pulsing audible tone alarm (chime/chirp) will be provided whenever a caution message is present without a warning message being present.

**Alarm silence:** Any active audible alarm will be able to be silenced by holding the ignition switch at the top position for three (3) to five (5) seconds. For improved safety, silenced audible alarms will intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp will act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition will enable the steady or pulsing tones respectively.

### **Indicator Lamp and Alarm Prove-Out**

A system will be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms will perform prove-out at initial power-up to ensure proper performance.

### **Control Switches**

For ease of use, the following controls will be provided immediately adjacent to the cab instrument panel within easy reach of the driver. All switches will have backlit labels for low light applications.

**Headlight/Parking light switch:** A three (3)-position maintained rocker switch will be provided. The first switch position will deactivate all parking and headlights. The second switch position will activate the parking lights. The third switch will activate the headlights.

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Panel back lighting intensity control switch: A three (3)-position momentary rocker switch will be provided. Pressing the top half of the switch, "Panel Up" increases the panel back lighting intensity and pressing the bottom half of the switch, "Panel Down" decreases the panel back lighting intensity. Pressing the half or bottom half of the switch several times will allow back lighting intensity to be gradually varied from minimum to maximum intensity level for ease of use.

Ignition switch: A three (3)-position maintained/momentary rocker switch will be provided. The first switch position will turn off and deactivate vehicle ignition. The second switch position will activate vehicle ignition and will perform prove-out on the telltale indicators and alarms for 3 to 5 seconds after the switch is turned on. A green indicator lamp is activated with vehicle ignition. The third momentary position will temporarily silence all active cab alarms. An alarm "chirp" may continue as long as alarm condition exists. Switching ignition to off position will terminate the alarm silence feature and reset function of cab alarm system.

Engine start switch: A two (2)-position momentary rocker switch will be provided. The first switch position is the default switch position. The second switch position will activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.

Hazard switch will be provided on the instrument panel or on the steering column.

Heater, defroster, and air conditioning control panel.

Turn signal arm: A self-canceling turn signal with high beam headlight controls will be provided.

Windshield wiper control will have high, low and intermittent modes.

Parking brake control: An air actuated push/pull park brake control valve will be provided.

Chassis horn control: Activation of the chassis horn control will be provided through the center of the steering wheel.

High idle engagement switch: A momentary rocker switch with integral indicator lamp will be provided. The switch will activate and deactivate the high idle function. The "OK To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch will indicate when the high idle function is engaged.

"OK To Engage High Idle" indicator lamp: A green indicator light will be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.

Emergency switching will be controlled by multiple individual warning light switches for various groups or areas of emergency warning lights. An Emergency Master switch provided on the instrument panel that enables or disables all individual warning light switches is included.

An additional "Emergency Master" button will be provided on the lower left hand corner of the gauge panel to allow convenient control of the "Emergency Master" system from inside the driver's door when standing on the ground.

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**Custom Switch Panels**

The design of cab instrumentation will allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There will be positions for up to four (4) switch panels in the lower instrument console and up to six (6) switch panels in the overhead visor console. All switches have backlit labels for low light conditions.

**Diagnostic Panel**

A diagnostic panel will be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel will allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches will allow ABS systems to provide blink codes should a problem exist.

The diagnostic panel will include the following:

- Engine diagnostic port
- Transmission diagnostic port
- ABS diagnostic port
- Roll sensor diagnostic port
- Command Zone USB diagnostic port
- ABS diagnostic switch (blink codes flashed on ABS telltale indicator)
- Diesel particulate filter regeneration switch (where applicable)
- Diesel particulate filter regeneration inhibit switch (where applicable)

**Cab LCD Display**

A digital four (4)-row by 20-character dot matrix display will be integral to the gauge panel. The display will be capable of showing simple graphical images as well as text. The display will be split into three (3) sections. Each section will have a dedicated function. The upper left section will display the outside ambient temperature.

The upper right section will display the following, along with other configuration specific information:

- Odometer
- Trip mileage
- PTO hours
- Fuel consumption
- Engine hours

The bottom section will display INFO, CAUTION, and WARNING messages. Text messages will automatically activate to describe the cause of an audible caution or warning alarm. The LCD will be capable of displaying multiple text messages should more than one caution or warning condition exist.

**AIR RESTRICTION INDICATOR**

A high air restriction warning indicator light LCD message with amber warning indicator and audible alarm will be provided.

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**"DO NOT MOVE APPARATUS" INDICATOR**

A flashing red indicator light, located in the driving compartment, will be illuminated automatically per the current NFPA requirements. The light will be labeled "Do Not Move Apparatus If Light Is On."

The same circuit that activates the Do Not Move Apparatus indicator will activate a pulsing alarm when the parking brake is released.

**DO NOT MOVE TRUCK MESSAGES**

Messages will be displayed on the Command Zone™, color display located within sight of the driver whenever the Do Not Move Truck light is active. The messages will designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).

The following messages will be displayed (where applicable):

- Do Not Move Truck
- DS Cab Door Open (Driver Side Cab Door Open)
- PS Cab Door Open (Passenger's Side Cab Door Open)
- DS Crew Cab Door Open (Driver Side Crew Cab Door Open)
- PS Crew Cab Door Open (Passenger's Side Crew Cab Door Open)
- DS Body Door Open (Driver Side Body Door Open)
- PS Body Door Open (Passenger's Side Body Door Open)
- Rear Body Door Open
- DS Ladder Rack Down (Driver Side Ladder Rack Down)
- PS Ladder Rack Down (Passenger Side Ladder Rack Down)
- Deck Gun Not Stowed
- Lt Tower Not Stowed (Light Tower Not Stowed)
- Fold Tank Not Stowed (Fold-A-Tank Not Stowed)
- Aerial Not Stowed (Aerial Device Not Stowed)
- Stabilizer Not Stowed
- Steps Not Stowed
- Handrail Not Stowed

Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved will be displayed as a caution message after the parking brake is disengaged.

**SWITCH PANELS**

The built-in switch panels will be located in the lower console or overhead console of the cab.

The switches will be rocker-type and include an integral indicator light. For quick, visual indication the switch will be illuminated whenever the switch is active. A 2-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch will be placed below the switches. The label will allow light to pass through the letters for improved visibility in low light conditions. Switches and light source are integral to the switch panel assembly.

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**WIPER CONTROL**

Wiper control will consist of a two (2)-speed windshield wiper control with intermittent feature and windshield washer controls. The control will be located in the left hand pod of the steering wheel.

**HOURLY METER - AERIAL DEVICE**

The following aerial hour meter messages will be included in the information centers:

- Aerial Hours, that keeps track of the time the aerial device is in motion.
- Aerial PTO Hours, that keeps track of the time the aerial master switch is on and the aerial PTO is engaged.

**AERIAL MASTER**

There will be a master switch for the aerial operating electrical system provided.

**AERIAL PTO SWITCH**

A PTO switch for the aerial with indicator light will be provided.

**CAB USB**

There will be four (4) USB terminations with a combination USB type A & C, wired to battery direct power, and provided per the following:

- One (1) within reach of the driver
- One (1) within reach of the passenger
- Two (2) on the rear of the engine tunnel, one (1) each side.

Battery direct loads cannot be load managed.

**SPARE CIRCUIT**

There will be one (1) pair of wires, including a positive and a negative, installed on the apparatus.

The wires will have the following features:

- The positive wire will be connected directly to the battery power.
- The negative wire will be connected to ground.
- Wires will be capable of carrying 20 amps.
- Power and ground will terminate behind officer seat.
- Termination will be to a Blue Sea System, Model 5025, 6 circuit with negative bus bar. The terminal block will include a cover with circuit labels.

Wires will be protected to meet the NFPA Automotive Fire Apparatus standard.

Battery direct loads cannot be Load Managed

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**INFORMATION CENTER**

An information center employing a 7.00" diagonal touch screen color LCD display will be encased in an ABS plastic housing.

The information center will have the following specifications:

- Operate in temperatures from -40 to 158 degrees Fahrenheit
- LCD optically bonded to hardened AR glass lens
- Five weather resistant user interface switches
- Grey with black accents
- Sunlight Readable
- Linux operating system
- Minimum of 1000nits rated display
- Display can be changed to an available foreign language
- A LCD display integral to the cab gauge panel will be included as outlined in the cab instrumentation area.
- Programmed to read US Customary

**General Screen Design**

Where possible, background colors will be used to provide "At a Glance" vehicle information. If information provided on a screen is within acceptable limits, a green background will be used.

If a caution or warning situation arises the following will occur:

- An amber background/text color will indicate a caution condition
- A red background/text color will indicate a warning condition
- The information center will utilize an "Alert Center" to display text messages for audible alarm tones. The text messages will be written to identify the item(s) causing the audible alarm to sound. If more than one (1) text message occurs, the messages will cycle every second until the problem(s) have been resolved. The background color for the "Alert Center" will change to indicate the severity of the "warning" message. If a warning and a caution condition occur simultaneously, the red background color will be shown for all alert center messages.
- A label for each button will exist. The label will indicate the function for each active button for each screen. Buttons that are not utilized on specific screens will have a button label with no text or symbol.

**Home/Transit Screen**

This screen will display the following:

- Vehicle Mitigation (if equipped)
- Water Level (if the water level system includes compatible communications to the information center)
- Foam Level (if the foam level system includes compatible communications to the information center)

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- Seat Belt Monitoring Screen
- Tire Pressure Monitoring (if equipped)
- Digital Speedometer
- Active Alarms

**On Scene Screen**

This screen will display the following and will be auto activated with pump engaged (if equipped):

- Battery Voltage
- Fuel
- Oil Pressure
- Coolant Temperature
- RPM
- Water Level (if equipped)
- Foam Level (if equipped)
- Foam Concentration (if equipped)
- Water Flow Rate (if equipped)
- Water Used (if equipped)
- Active Alarms

**Virtual Buttons**

There will be four (4) virtual switch panel screens that match the overhead and lower lighting and HVAC switch panels.

**Page Screen**

The page screen will display the following and allow the user to progress into other screens for further functionality:

- Diagnostics
  - Faults
    - Listed by order of occurrence
    - Allows to sort by system
  - Interlock
    - Throttle Interlocks
    - Pump Interlocks (if equipped)
    - Aerial Interlocks (if equipped)
    - PTO Interlocks (if equipped)
  - Load Manager
    - A list of items to be load managed will be provided. The list will provide a description of the load.
    - The lower the priority numbers the earlier the device will be shed should a low voltage condition occur.
    - The screen will indicate if a load has been shed (disabled) or not shed.

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- "At a glance" color features are utilized on this screen.
- Systems
  - Command Zone
    - Module type and ID number
    - Module Version
    - Input or output number
    - Circuit number connected to that input or output
    - Status of the input or output
    - Power and Constant Current module diagnostic information
  - Foam (if equipped)
  - Pressure Controller (if equipped)
  - Generator Frequency (if equipped)
- Live Data
  - General Truck Data
- Maintenance
  - Engine oil and filter
  - Transmission oil and filter
  - Pump oil (if equipped)
  - Foam (if equipped)
  - Aerial (if equipped)
- Setup
  - Clock Setup
  - Date & Time
    - 12 or 24 hour format
    - Set time and date
  - Backlight
    - Daytime
    - Night time
    - Sensitivity
  - Unit Selection
  - Home Screen
  - Virtual Button Setup
  - On Scene Screen Setup
  - Configure Video Mode
    - Set Video Contrast
    - Set Video Color
    - Set Video Tint
- Do Not Move
  - The screen will indicate the approximate location and type of item that is open or is not stowed for travel. The actual status of the following devices will be indicated
    - Driver Side Cab Door
    - Passenger's Side Cab Door

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- Driver Side Crew Cab Door
- Passenger's Side Crew Cab Door
- Driver Side Body Doors
- Passenger's Side Body Doors
- Rear Body Door(s)
- Ladder Rack (if applicable)
- Deck Gun (if applicable)
- Light Tower (if applicable)
- Hatch Door (if applicable)
- Stabilizers (if applicable)
- Steps (if applicable)
- Notifications
  - View Active Alarms
    - Shows a list of all active alarms including date and time of the occurrence is shown with each alarm
    - Silence Alarms - All alarms are silenced
- Timer Screen
- HVAC (if equipped)
- Tire Information (if equipped)
- Ascendant Set Up Confirmation (if equipped)

Button functions and button labels may change with each screen.

### **COLLISION MITIGATION**

There will be a HAAS Alert®, Model HA7 Responder-to-Vehicle (R2V) collision avoidance system provided on the apparatus. The HA7 cellular transponder module will be installed behind the cab windshield, as high and near to the center as practical, to allow clear visibility to the sky. The module dimensions are 5.40" long x 2.70" wide x 1.30" high, and operating temperature range is -40 degrees Celsius to 85 degrees Celsius.

The transponder will be connected to the vehicle's emergency master circuit and battery direct power and ground.

While responding with emergency lights on, the HA7 transponder sends alert messages via cellular network to motorists in the vicinity of the responding truck that are equipped with the WAZE app.

While on scene with emergency lights on, the HA7 transponder sends road hazard alerts to motorists in the vicinity of the truck that are equipped with the WAZE app.

The HA7 Responder-to-Vehicle (R2V) collision avoidance system will include the transponder and a 5 year cellular plan subscription.

Activation of the HAAS Alert system requires a representative of the customer to accept the End User License Agreement (EULA) via an on-line portal.

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**VEHICLE DATA RECORDER**

There will be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided.

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A USB cable can be used to connect the VDR to a laptop to retrieve required information. The program to download the information from the VDR will be available to download on-line.

The vehicle data recorder will be capable of recording the following data via hardwired and/or CAN inputs:

- Vehicle Speed - MPH
- Acceleration - MPH/sec
- Deceleration - MPH/sec
- Engine Speed - RPM
- Engine Throttle Position - % of Full Throttle
- ABS Event - On/Off
- Seat Occupied Status - Yes/No by Position
- Seat Belt Buckled Status - Yes/No by Position
- Master Optical Warning Device Switch - On/Off
- Internal clock syncs the time and date when a laptop is connected.

**Seat Belt Monitoring System**

A seat belt monitoring system (SBMS) will be provided on the Command Zone™ color display. The SBMS will be capable of monitoring up to 10 seating positions indicating the status of each seat position per the following:

- Seat Occupied & Buckled = Green LED indicator illuminated
- Seat Occupied & Unbuckled = Red LED indicator with audible alarm
- No Occupant & Buckled = Red LED indicator with audible alarm
- No Occupant & Unbuckled = No indicator and no alarm
- FAULT = Blue LED indicator illuminated

The seat belt monitoring screen will become active on the Command Zone color display when:

- The home screen is active:
  - and there is any occupant seated but not buckled or any belt buckled with an occupant.
  - and there are no other Do Not Move Apparatus conditions present. As soon as all Do Not Move Apparatus conditions are cleared, the SBMS will be activated.

The SBMS will include an audible alarm that will warn that an unbuckled occupant condition exists and the parking brake is released, or the transmission is not in park.

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**RADIO ANTENNA MOUNT**

There will be two (2) standard 1.125", 18 thread antenna-mounting base(s) installed one (1) on the left side and one (1) on the right side on the cab roof with high efficiency, low loss, coaxial cable(s) routed to the instrument panel area. A weatherproof cap will be installed on the mount.

**VEHICLE CAMERA SYSTEM**

There will be a color vehicle camera system provided with the following:

- One (1) Standard Definition (SD) camera located at the rear of the apparatus, pointing rearward, displayed automatically with the vehicle in reverse.

The camera images will be displayed on the left side vehicle information center display. Audio from the microphone on the rear camera will be not provided.

The following components will be included:

- One (1) SV-CW134639CAI Camera
- All necessary cables

**Camera Switcher**

A camera switcher is not required.

**ELECTRICAL POWER CONTROL SYSTEM**

The primary power distribution will be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers will be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers will be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers will be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays will be easily accessible.

Distribution centers located throughout the vehicle will contain battery powered studs for supplying customer installed equipment thus providing a lower cost of ownership.

Circuit protection devices, which conform to SAE standards, will be utilized to protect electrical circuits. All circuit protection devices will be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers will be Type-I automatic reset (continuously resetting). When required, automotive type fuses will be utilized to protect electronic equipment. Control relays and solenoid will have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.

**Solid-State Control System**

A solid-state electronics based control system will be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network will consist of electronic modules, electronic control modules to include a see through housing, a power indicator, a status

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indicator and circuit indicators located near their point of use to reduce harness lengths and improve reliability. The control system will comply with SAE J1939-11 recommended practices.

The control system will operate as a master-slave system whereas the main control module instructs all other system components. The system will contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system will utilize a Real Time Operating System (RTOS) fully compliant with OSEK/VDX™ specifications providing a lower cost of ownership.

For increased reliability and simplified use the control system modules will include the following attributes:

- Green LED indicator light for module power
- Red LED indicator light for network communication stability status
- Control system self test at activation and continually throughout vehicle operation
- No moving parts due to transistor logic
- Software logic control for NFPA mandated safety interlocks and indicators
- Integrated electrical system load management without additional components
- Integrated electrical load sequencing system without additional components
- Customized control software to the vehicle's configuration
- Factory and field programmable to accommodate changes to the vehicle's operating parameters

To assure long life and operation in a broad range of environmental conditions, the solid-state control system modules will meet the following specifications:

- Module circuit board will meet SAE J771 specifications
- Operating temperature from -40 degrees Celsius to +70 degrees Celsius (-40 degrees Fahrenheit to +158 degrees Fahrenheit)
- Storage temperature from -40 degrees Celsius to +70 degrees Celsius (-40 degrees Fahrenheit to +158 degrees Fahrenheit)
- Vibration to 50g
- IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and one (1) meter)
- Operating voltage from eight (8) volts to 32 volts DC

The main controller will activate status indicators and audible alarms designed to provide warning of problems before they become critical.

**Circuit Protection and Control Diagram**

Copies of all job-specific, computer network input and output (I/O) connections will be provided with each chassis. The sheets will indicate the function of each module connection point, circuit protection information (where applicable), wire numbers, wire colors and load management information.

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**On-Board Electrical System Diagnostics**

The on-board information center will include the following diagnostic information:

- Text description of active warning or caution alarms
- Simplified warning indicators
- Amber caution indication with intermittent alarm
- Red warning indication with steady tone alarm

Advanced diagnostic feature will be provided in this control system. From the Command Zone display or connected wireless device, these features allow the user to monitor the real-time status of every input or output on the vehicle. It also allows users logged in as an administrator to force on inputs or outputs to assist the troubleshooting process.

**TCU Module with WiFi**

An in cab module will provide WiFi wireless interface and data logging capability. The WiFi interface will comply with IEEE 802.11 b/g/n capabilities while communicating at 2.4 Gigahertz. The module will communicate through a black WiFi antenna allowing a line of site communication range of up to 300 feet with a roof mounted antenna.

The module will transmit a password protected web page to a WiFi enabled device (i.e. most smart phones, tablets or laptops) allowing two levels of user interaction. The firefighter level will allow vehicle monitoring of the vehicle and firefighting systems on the apparatus. The technician level will allow diagnostic access to inputs and outputs installed on the Command Zone™, control and information system.

The TCU capability will record faults from the engine, transmission, ABS and Command Zone™, control and information systems as they occur. No other data will be recorded at the time the fault occurs. The data TCU will provide up to 2 Gigabytes of data storage.

The TCU will provide a means to download the TCU information and update software in the device.

**Indicator Light and Alarm Prove-Out System**

A system will be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

**Voltage Monitor System**

A voltage monitoring system will be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system will provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm will activate if the system falls below 11.8 volts DC for more than two (2) minutes.

**Dedicated Radio Equipment Connection Points**

There will be three (3) studs provided in the primary power distribution center located in front of the officer for two-way radio equipment. The studs will consist of the following:

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- 12-volt 40-amp battery switched power
- 12-volt 60-amp ignition switched power
- 12-volt 60-amp direct battery power

There will also be a 12-volt 100-amp ground stud located in or adjacent to the power distribution center.

### **EMI/RFI Protection**

To prevent erroneous signals from crosstalk contamination and interference, the electrical system will meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system will be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus will have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system will meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, will provide EMC testing reports from testing conducted on an entire apparatus and will certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

EMI/RFI susceptibility will be controlled by applying appropriate circuit designs and shielding. The electrical system will be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing will be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

### **ELECTRICAL SYSTEM PROGNOSTICS**

There will be a software based vehicle tool provided to predict remaining life of the vehicles critical fluid and events.

The system will send automatic indications to the Command Zone™ information center and/or wireless enabled devices to proactively alert of upcoming service intervals.

Prognostics will include the following:

- Engine oil and filter
- Transmission oil and filter

### **TELEMATICS SYSTEM**

Your vehicle will include a cellular-based vehicle telematics system including a telematic control unit with external cellular Wi-Fi and GPS antenna. Pierce will provide access to a web-based user interface portal that will allow users to access vehicle data collected as part of the system, allow users to configure monitoring tools, provide a global view of the location of each vehicle that has the system,

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provide a summary of fleet data, etc. The web-based user interface portal or certain features thereof may be provided on a subscription basis.

The telematic control unit will be fully integrated into the electrical system of the vehicle, will monitor the vehicle through the CAN data bus, and will transmit data through a secure AT&T 4G LTE cellular connection, and be provided with a 3 year subscription.

The web-based user interface portal will provide, among other features:

- User defined interval notifications
- User defined fault alerts
- Remote access to Command Zone™ diagnostics
- Vehicle analytics and activity monitoring
- Vehicle system status

The system is activated while building your vehicle and thereafter remains active for a 60-day grace period starting when your vehicle ships from the factory. This means that the system is active at the time of factory acceptance and during the 60-day grace period. By selecting this option, it is agreed that use of the system and the web-based user interface portal will be subject to the terms set forth in the Data Systems Agreement referenced at <https://www.piercemfg.com/privacy-statement>. Customers will be provided with an initial login at the time of factory acceptance to verify performance of the system and the web-based user interface portal. The term of the subscription, if any, will begin when the vehicle ships from the factory. If customers do not log into the web-based user interface portal and confirm acceptance of the terms before the 60-day grace period ends, the system will be deactivated, and no new data will be collected or retained Pierce. Reactivation can be coordinated through the customer's authorized Pierce Dealer.

### **ELECTRICAL**

All 12-volt electrical equipment installed by the apparatus manufacturer will conform to modern automotive practices. All wiring will be high temperature crosslink type. Wiring will be run, in loom or conduit, where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers will be provided which conform to SAE Standards. Wiring will be color, function and number coded. Function and number codes will be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors will be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

Electrical wiring and equipment will be installed utilizing the following guidelines:

1. All holes made in the roof will be caulked with silicon. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof.
2. Any electrical component that is installed in an exposed area will be mounted in a manner that will not allow moisture to accumulate in it. Exposed area will be defined as any location outside of the cab or body.

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3. Electrical components designed to be removed for maintenance will not be fastened with nuts and bolts. Metal screws will be used in mounting these devices. Also a coil of wire will be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.
4. Corrosion preventative compound will be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections will require this compound in the plug to prevent corrosion and for easy separation (of the plug).
5. All lights that have their sockets in a weather exposed area will have corrosion preventative compound added to the socket terminal area.
6. All electrical terminals in exposed areas will have silicon applied completely over the metal portion of the terminal.

All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, will be furnished. Rear identification lights will be recessed mounted for protection. Lights and wiring mounted in the rear bulkheads will be protected from damage by installing a false bulkhead inside the rear compartments.

An operational test will be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

The results of the tests will be recorded and provided to the purchaser at time of delivery.

#### **BATTERY SYSTEM**

There will be four (4) 12 volt Stryten/Exide®, Model 31S950X5W, batteries that include the following features will be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Group 31
- Rating of 3800 CCA at 0 degrees Fahrenheit
- 760 minutes of reserve capacity
- Threaded stainless steel studs

Each battery case will be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover will be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery will consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

#### **BATTERY SYSTEM**

There will be a single starting system with an ignition switch and starter button provided and located on the cab instrument panel.

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**MASTER BATTERY SWITCH**

There will be a master battery switch provided within the cab within easy reach of the driver to activate the battery system.

An indicator light will be provided on the instrument panel to notify the driver of the status of the battery system.

**BATTERY COMPARTMENTS**

Batteries will be placed on non-corrosive mats and be stored in well ventilated compartments located under the cab and bolted directly to the chassis frame. The battery boxes will have reinforced sides. The battery compartments will be constructed of 0.188" steel plate and be designed to accommodate a maximum of three (3) group 31 batteries in each compartment. The battery hold-downs will be of a non-corrosive material. All bolts and nuts will be stainless steel.

Heavy-duty, 2/0 gauge, color coded battery cables will be provided. Battery terminal connections will be coated with anti-corrosion compound.

Battery solenoid terminal connections will be encapsulated with semi-permanent rubberized compound.

**JUMPER STUDS**

One (1) set of battery jumper studs with plastic color-coded covers will be included on the battery compartments.

**BATTERY CHARGER**

There will be a Kussmaul™, Chief Series Smart Charger 6012, product code 091-266-12-60, 60 amp battery charger with build-in touch screen display provided.

The battery charger will be wired to the AC shoreline inlet through a junction box located near the battery charger.

The battery charger will be located in the cab behind the driver seat.

**REMOTE CONTROL PANEL - BATTERY CHARGER**

There will be a Kussmaul™, Model 091-94-12 universal display panel included. It will be wired directly to the chassis batteries.

The battery charger indicator will be located on the driver's seat riser.

**AUTO EJECT FOR SHORELINE**

There will be one (1) Kussmaul™, Model 091-55-20-120, 20 amp 120 volt AC shoreline inlet(s) provided to operate the dedicated 120 volt AC circuits on the apparatus.

The shoreline inlet(s) will include red weatherproof flip up cover(s).

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There will be a release solenoid wired to the vehicle's starter to eject the AC connector when the engine is starting.

The shoreline(s) will be connected to the battery charger.

There will be a mating connector body supplied with the loose equipment.

There will be a label installed near the inlet(s) that state the following:

- Line Voltage
- Current Rating (amps)
- Phase
- Frequency

The shoreline receptacle will be located on the driver side of cab, to the front of cab door.

### **ALTERNATOR**

There will be a Leece-Neville, Model BLP4003, alternator provided. It will have a rated output current of 420 amp as measured by SAE method J56. The alternator will feature an integral, self diagnostic regulator and rectifier. The alternator will be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

### **ELECTRONIC LOAD MANAGER**

An electronic load management (ELM) system will be provided that monitors the vehicles 12-volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.

For improved reliability and ease of use, the load manager system will be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components will not be allowed.

The system will include the following features:

- System voltage monitoring.
- A shed load will remain inactive for a minimum of five minutes to prevent the load from cycling on and off.
- Sixteen available electronic load shedding levels.
- Priority levels can be set for individual outputs.
- High Idle to activate before any electric loads are shed and deactivate with the service brake.
  - If enabled:
    - "Load Man Hi-Idle On" will display on the information center.
    - Hi-Idle will not activate until 30 seconds after engine start up.
- Individual switch "on" indicator to flash when the particular load has been shed.
- The information center indicates system voltage.

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The information center, where applicable, includes a "Load Manager" screen indicating the following:

- Load managed items list, with priority levels and item condition.
- Individual load managed item condition:
  - ON = not shed
  - SHED = shed

### **SEQUENCER**

A sequencer will be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation will allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

For improved reliability and ease of use, the load sequencing system will be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components will not be allowed.

Emergency light sequencing will operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights will be activated one by one at half-second intervals. Sequenced emergency light switch indicators will flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer will deactivate the warning light loads in the reverse order.

Sequencing of the following items will also occur, in conjunction with the ignition switch, at half-second intervals:

- Cab Heater and Air Conditioning
- Crew Cab Heater (if applicable)
- Crew Cab Air Conditioning (if applicable)
- Exhaust Fans (if applicable)
- Third Evaporator (if applicable)

### **HEADLIGHTS**

There will be four (4) JW Speaker®, Model 8800, 4" x 6" rectangular LED lights with heated lens mounted in the front quad style, chrome housing on each side of the cab grille:

- the outside light on each side will contain a part number 055\*\*\*1 low beam module
- the inside light on each side will contain a part number 055\*\*\*1 high beam module
- the headlights to include chrome bezels

The low beam lights will be activated when the headlight switch is on.

The high beam and low beam lights will be activated when the headlight switch and the high beam switch is activated.

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**DIRECTIONAL LIGHTS**

There will be two (2) Whelen 600 series, LED combination directional/marker lights provided. The lights will be located on the outside cab corners, next to the headlights.

The color of the lenses will be clear.

**INTERMEDIATE LIGHT**

There will be two (2) Weldon, Model 9186-8580-29, amber LED turn signal marker lights furnished, one (1) each side, in the rear fender panel. The light will double as a turn signal and marker light.

**CAB CLEARANCE/MARKER/ID LIGHTS**

There will be five (5) Truck-Lite, Model 35375Y, amber LED lights provided to indicate the presence and overall width of the vehicle in the following locations:

- Three (3) amber LED identification lights will be installed in the center of the cab above the windshield.
- Two (2) amber LED clearance lights will be installed, one (1) on each outboard side of the cab above the windshield.

The lights will be mounted with an aluminum guard.

**FRONT CAB SIDE DIRECTIONAL/MARKER LIGHTS**

There will be two (2) Truck-Lite®, Model 19036Y, amber LED lights installed to the outside of the chrome wrap around bezel, one (1) on each side of the cab.

The lights will activate as marker lights with the headlight switch and directional lights with the corresponding directional circuit.

**REAR CLEARANCE/MARKER/ID LIGHTING**

There will be three (3) Truck-Lite®, Model 35200R, LED lights used as identification lights located at the rear of the apparatus per the following:

- As close as practical to the vertical centerline
- Centers spaced not less than 6.00" or more than 12.00" apart
- Red in color
- All at the same height

There will be two (2) Truck-Lite, Model 35200R, LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following:

- To indicate the overall width of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the rear
- All at the same height

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There will be two (2) Truck-Lite, Model 35200R, LED lights installed on the side of the apparatus as marker lights as close to the rear as practical per the following:

- To indicate the overall length of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the side
- All at the same height

There will be two (2) red reflectors located on the rear of the truck facing to the rear. One (1) each side, as far to the outside as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

There will be two (2) red reflectors located on the side of the truck facing to the side. One (1) each side, as far to the rear as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

Per FMVSS 108 and CMVSS 108 requirements.

**MARKER LIGHTS**

There will be one (1) pair of amber and red LED marker lights with rubber arm, located at the rear most lower corner of the body. The amber lens will face the front and the red lens will face the rear of the truck.

These lights will be activated with the running lights of the vehicle.

**REAR FMVSS LIGHTING**

There will be two (2) wrap around tri-cluster LED modules provided on the face of the rear body compartments.

Each tri-cluster will include the following:

- One (1) LED stop/tail light
- One (1) LED directional light
- One (1) LED backup light

**LICENSE PLATE BRACKET**

One (1) license plate bracket constructed of stainless steel will be provided at the rear of the apparatus.

One (1) white LED light with chrome housing will be provided to illuminate the license plate. A stainless steel light shield will be provided over the light that will direct illumination downward, preventing white light to the rear.

**BACK-UP ALARM**

A PRECO, Model 1040, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse will be provided. The device will sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels.

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**CAB PERIMETER SCENE LIGHTS**

There will be four (4) Amdor, Model AY-LB-12HW0\*\*, white LED strip lights provided, one (1) for each cab door that will meet NFPA ground lighting requirements.

These lights will be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body perimeter scene lights.

**PUMP HOUSE PERIMETER LIGHTS**

There will be one (1) Amdor, Model AY-LB-12HW020, 350 lumens, 20.00" LED weatherproof strip light with bracket provided under the passenger's side pump panel running board.

If the combination of options in the vehicle does not permit clearance for a 20.00" light, a 12.00" version of the Amdor light will be installed.

The light will be activated when the battery switch is on, and controlled by the same means as the body perimeter lights.

**BODY PERIMETER SCENE LIGHTS**

There will be one (1) Model CLC-1049-20-AL, 20.00" 12 volt DC LED strip light provided under the side turntable access steps.

The perimeter scene lights will be activated when the parking brake is applied.

**ENHANCED SOFTWARE FOR PERIMETER LIGHTS**

All perimeter lights will be deactivated when the parking brake is released unless alternate control is selected.

The cab and crew cab perimeter lights will remain on for ten (10) seconds for improved visibility after the doors closed.

**STEP LIGHTS**

Two (2) white LED step lights will be provided, one (1) on each side of the front body.

The lights will be actuated with the pump panel light switch.

All steps on the apparatus will be illuminated per the current edition of applicable NFPA standards.

**12 VOLT LIGHTING**

There will be two (2) HiViz Model FT-MB-12-\*, 2.56" high x 17.65" long x 3.31" deep 6,336 lumens 12 volt DC LED light(s) with with a combination of flood and spot optics provided on the cab roof located, one (1) on the driver's side and one (1) on the passenger's side under the lightbars.

The painted parts of the light housing and brackets to be black.

The light(s) will be controlled by a switch at the driver's side switch panel and by a switch at the passenger's side switch panel.

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The light(s) may be load managed when the parking brake is applied.

**12 VOLT LIGHTING**

There will be one (1) HiViz®, Model FT-GESM, 20,500 equivalent lumens 8.65" high x 10.61" wide x 2.78" deep light(s) with white LEDs installed on the cab behind driver side door, above side crew cab window. The light(s) to include black optic holders, black bezels and black fixture body.

The light(s) will be activated by a switch at the driver's side switch panel and by a switch at the left side pump panel.

The light(s) may be load managed when the parking brake is applied.

**12 VOLT LIGHTING**

There will be one (1) HiViz®, Model FT-GESM, 20,500 equivalent lumens 8.65" high x 10.61" wide x 2.78" deep light(s) with white LEDs installed on the cab behind officers side door, above side crew cab window. The light(s) to include black optic holders, black bezels and black fixture body.

The light(s) will be activated by a switch at the driver's side switch panel and by a switch at the left side pump panel.

The light(s) may be load managed when the parking brake is applied.

**12 VOLT LIGHTING**

There will one (1) HiViz Model FT-B-65-\*, 18,849.6 effective lumens 2.06" high x 65.23" long x 2.45" deep 12 volt DC light(s) with white LEDs and a combination of spot, and flood optics installed on the apparatus located, centered over compartment RS2, on catwalk..

The painted parts of the light housing and brackets to be black.

The light(s) will be controlled by the same control that has been selected for the passenger's side scene light(s).

The light(s) may be load managed when the parking brake is applied.

**12 VOLT LIGHTING**

There will one (1) HiViz Model FT-B-65-\*, 18,849.6 effective lumens 2.06" high x 65.23" long x 2.45" deep 12 volt DC light(s) with white LEDs and a combination of spot, and flood optics installed on the apparatus located, centered over compartment LS2, on catwalk..

The painted parts of the light housing and brackets to be black.

The light(s) will be controlled by the same control that has been selected for the driver's side scene light(s).

The light(s) may be load managed when the parking brake is applied.

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**HOSE BED LIGHTS**

There will be two (2) Amdor, part number AY-LB-12HW040, 40.00" long 12 volt DC light strips with white LEDs and 45 degree extruded aluminum bracket provided to illuminate the hose bed area.

- One (1) light will be installed on the left side of the hose bed.
- One (1) light will be installed on the right side of the hose bed.

The lights will be activated by a cup switch at the rear of the apparatus no more than 72.00" from the ground.

**REAR SCENE LIGHT(S)**

There will be two (2) HiViz, Model FT-GSMJR-\*, 5.04" high x 7.40" wide x 1.54" deep 5,000 raw lumens light(s) with white LEDs black trim and black optic holder(s) surface mounted at the rear of the apparatus, rear of truck, one each side, mid height..

The light(s) will be controlled by a switch at the driver's side switch panel, by a switch at the driver's side pump panel and by a cup switch at the driver's side rear bulkhead.

The light(s) may be load managed when the parking brake is applied.

**WALKING SURFACE LIGHT**

There will be Model FRP, 4.00" round black 12 volt DC LED floodlight(s) with bolt mount provided to illuminate the entire designated walking surface on top of the body.

The light(s) will be activated when the body step lights are on.

**WATER TANK**

The water tank will have a capacity of 500 gallons and will be constructed of polypropylene plastic in a rectangular shape.

The joints and seams will be nitrogen welded inside and out.

The tank will be baffled in accordance with the current edition of applicable NFPA standards.

The baffles will have vent openings at both the top and bottom of each baffle to permit movement of air and water between compartments.

The longitudinal partitions will be constructed of 0.38" polypropylene plastic and extend from the bottom of the tank through the top cover to allow positive welding.

The transverse partitions extend from 4.00" off the bottom to the underside of the top cover.

All partitions interlock and will be welded to the tank bottom and sides.

The tank top will be constructed of 0.50" polypropylene.

It will be recessed 0.38" and will be welded to the tank sides and the longitudinal partitions.

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It will be supported to keep it rigid during fast filling conditions.

Construction will include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions.

Two of the dowels will be drilled and tapped (0.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump will be provided at the bottom of the water tank. The sump will include a drain plug and the tank outlet.

Tank will be installed in a fabricated "cradle" assembly constructed of structural steel.

Sufficient crossmembers are provided to properly support bottom of tank.

Crossmembers are constructed of steel bar channel or rectangular tubing.

Tank "floats" in cradle to avoid torsional stress caused by chassis frame flexing.

Rubber cushions, 0.50" thick x 3.00" wide, will be placed on all horizontal surfaces that the tank rests on.

Stops are provided to prevent an empty tank from bouncing excessively while moving vehicle.

Tank mounting system is approved by the manufacturer.

Fill tower will be constructed of 0.50" polypropylene and will be a minimum of 8.00" wide x 14.00" long.

Fill tower will be furnished with a 0.25" thick polypropylene screen and a hinged cover.

An overflow pipe, constructed of 4.00" schedule 40 polypropylene, will be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.

**HOSE BED**

The hose bed will be fabricated of 0.125" 5052-H32 aluminum with a tensile strength range of 31,000 to 38,000 psi.

The sides of the hose bed will not form any portion of the fender compartments.

The upper and rear edges of the hose bed side panels will have a double break for rigidity.

The hose bed will be located ahead of the ladder turntable.

There will be a hose chute to the side and rear of the hose bed on both the left and right side to allow for payout/removal of the hose.

The hose bed flooring will consist of removable aluminum grating with a top surface that is perforated to aid in hose aeration.

The hose bed/cargo area walls will be unpainted and dual action finished.

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Hose capacity will be a minimum of 1000' of 5.00" large diameter hose.

**AERIAL HOSE BED HOSE RESTRAINT**

The hose in the hose beds will be restrained by black nylon Velcro® straps at the top of the hose bed and 1.00" black nylon web design with a 2.00" box pattern at the rear of the hose beds. The Velcro strap will be installed to the top of the hose bed side sheets. The rear webbing will have 1.00" web straps that loop through footman loops and fasten with spring clip and hook fasteners.

**RUNNING BOARDS**

The running boards will be fabricated of 0.125" bright aluminum treadplate and supported by structural steel angle assemblies bolted to the chassis frame rails.

Running boards will be 13.00" deep and are spaced away from the body 0.50".

A splash guard will be provided to keep road dirt or water from splashing up onto the pump panels.

The running boards will have a riser on the body to protect the painted surface from damage by stepping on the running boards.

The entire surface of the running boards will be covered with bright aluminum treadplate.

**TURNTABLE STEPS**

Access to the turntable will be provided by a set of swing-down steps on the left side of the truck. The bottom step to be a flip down, stirrup step. The bottom step will have a step height not exceeding 24.00" from the ground to the top surface of the step at any time. All steps will have a height no greater than 14.00" from top surface to top surface.

The access steps will be located rearward of the compartmentation.

The swing down step assembly will be constructed of D/A finished aluminum with bright aluminum treadplate steps. The steps to have a punched grip pattern design.

The stepwell will be lined with bright aluminum treadplate to act as scuffplates.

There will be a Southco raised trigger C2 chrome lever latch provided on the access door within the step well.

The step assembly will be stowed with a lift bar latching mechanism.

A knurled aluminum handrail will be provided on each side of the access steps.

Holes will be provided in each side step plate for hand holds.

The steps will be connected to the "Do Not Move Truck" indicator in the cab.

**STEP LIGHTS**

There will be three (3) white P25 LED step lights provided for the aerial turntable access steps.

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In order to ensure exceptional illumination, each light will provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The step lights will be activated by when the parking brake is applied.

**SMOOTH ALUMINUM REAR WALL**

The rear wall will be smooth aluminum.

**TOW EYES**

Two (2) rear painted tow eyes will be located at the rear of the apparatus and will be mounted directly to the frame rails. The inner and outer edges of the tow eyes will be radiused. Each tow eye will be rated for 9000 lb. The tow eyes will be painted to match the lower job color.

**COMPARTMENTATION**

Compartmentation will be fabricated of 0.125" 5052 aluminum.

Side compartments will be an integral assembly with the rear fenders.

Circular fender liners will be provided. For prevention of rust pockets and ease of maintenance, the fender liners will be formed from aluminum and removable for maintenance.

Compartment flooring will be of the sweep out design with the floor higher than the compartment door lip.

Drip protection will be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate or polished stainless steel.

The top of the compartment will be covered with bright aluminum treadplate rolled over the edges on the front, rear and outward side. These covers will have the corners welded.

Side compartment covers will be separate from the compartment tops.

All screws and bolts, which are not Grade 8, will be stainless steel and where they protrude into a compartment will have acorn nuts on the ends to prevent injury.

**UNDERBODY SUPPORT SYSTEM**

The backbone of the body support system will begin with the aerial torque box which is the strongest component of the apparatus and is designed for sustaining maximum loads.

An aluminum body structure will be mounted to the aerial torque box at three (3) points to create a floating substructure which will result in an 800 lb equipment support rating per lower compartment and provide up to 0.31" accumulative floor thickness.

The three (3) point body mounting system will consist of two (2) points in the front and one (1) in the rear. The front mounts will attach to the top of the stabilizer H-box, and the rear mount will attach to the rear of the torque box at the chassis centerline.

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The body structure will be mounted with neoprene elastomer isolators. These isolators will have a broad load range, proven viability in vehicular applications, be of a fail-safe design and allow for all necessary movement in three (3) transitional and rotational modes.

The combination of the three (3) point mounting system and elastomer isolators allow the chassis and torque box to flex without driving loads into the body.

**AGGRESSIVE WALKING SURFACE**

All exterior surfaces designated as stepping, standing, and walking areas will comply with the required average slip resistance of the current NFPA standards.

**LOUVERS**

All body compartments will be vented to provide one (1) way airflow out of the compartment that prevents water and dirt from gaining access to the compartment.

**TESTING OF BODY DESIGN**

Body structural analysis will be fully tested. Proven engineering and test techniques such as finite element analysis, model analysis, and strain gauging have been performed with special attention given to fatigue, life and structural integrity of the body and substructure.

The body will be tested while loaded to its greatest in-service weight.

The criteria used during the testing procedure will include:

- Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.
- Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions.
- Driving the vehicle on at 35 mph on a washboard road.
- Driving the vehicle at 55 mph on a smooth road.
- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement.

**LEFT SIDE COMPARTMENTATION**

The full height roll-up door compartment ahead of the rear wheels will be 39.19" wide x 63.00" high x 26.00" deep inside the lower 26.38" and 12.00" deep inside the upper portion with a clear door opening of 36.44" wide x 56.00" high.

There will be one (1) roll-up door compartment above the wheelwell and stabilizer. The compartment will be 83.88" wide x 25.25" high x 12.00" deep inside with a clear door opening of 81.12" wide x 19.75" high.

All compartments will include a drip pan below the roll of the door.

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The full height roll-up door compartment behind the rear wheel will be 45.12" wide x 57.00" high x 26.00" deep inside the lower 25.50" and 12.00" deep in the upper portion with a clear door opening of 43.38" wide x 50.00" high.

The compartment will include a drip pan below the roll of the door.

**RIGHT SIDE COMPARTMENTATION**

The full height roll-up door compartment ahead of the rear wheels will be 39.19" wide x 64.00" high x 26.00" deep inside the lower 27.38" and 12.00" deep inside the upper portion with a clear door opening of 36.44" wide x 57.00" high.

There will be one (1) roll-up door compartment above the wheelwell and stabilizer. The compartment will be 83.88" wide x 25.25" high x 12.00" deep inside with a clear door opening of 81.12" wide x 19.75" high.

All compartments will include a drip pan below the roll of the door.

The full height roll-up door compartment behind the rear wheel will be 69.00" wide x 57.00" high x 26.00" deep inside the lower 25.50" and 12.00" deep in the upper portion with a clear door opening of 67.25" wide x 50.00" high.

The compartment will include a drip pan below the roll of the door.

**REAR COMPARTMENT**

A compartment will be provided at the rear of the unit.

Compartment will be 27.75" wide x 35.00" high x 26.25" deep with a clear door opening of 25.00" wide x 29.50" high.

The compartment will be furnished with a satin aluminum roll-up door.

A stainless steel lift bar to be provided for opening the door and located at the bottom of each door with latches on the outer extrusion of the door frame. A ledge to be supplied over lift bar for additional area to aid in closing the door. The lift bar will be located at the bottom of door with striker latches installed at the base of the side frames. Side frame mounted door strikers will include support beneath the stainless steel lift bar to prevent door curtain bounce, improve bottom seal life expectancy and to avoid false door ajar signals.

**SIDE COMPARTMENT ROLL-UP DOORS**

There will be six (6) compartment doors installed on the side compartments, double faced, aluminum construction, painted one (1) color to match the lower portion of the body and manufactured by AMDOR™ brand roll-up doors.

Door(s) will be constructed using 1.00" extruded double wall aluminum slats which will feature a flat smooth interior surface to provide maximum protection against equipment hang-up. The slats will be connected with a structural driven ball and socket hinge designed to provide maximum curtain

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diaphragm strength. Mounting and adjusting the curtain will be done with a clip system that connects the curtain to the balancer drum allowing for easy tension adjustment without tools. The slats will be mounted in reusable slat shoes with positive snap-lock securement.

Each slat will incorporate weather tight recessed dual durometer seals. One (1) fin will be designed to locate the seal within the extrusion. The second will serve as a wiping seal which will also allow for compression to prevent water ingress.

The doors will be mounted in a one (1)-piece aluminum side frame with recessed side seals to minimize seal damage during equipment deployment. All seals including side frames, top gutters and bottom panel are to be manufactured utilizing non-marring materials.

Bottom panel flange of roll-up door will be equipped with two (2) cut-outs to allow for easier access with gloved hands.

A stainless steel lift bar to be provided for opening the door and located at the bottom of each door with latches on the outer extrusion of the door frame. A ledge to be supplied over lift bar for additional area to aid in closing the door. The lift bar will be located at the bottom of door with striker latches installed at the base of the side frames. Side frame mounted door strikers will include support beneath the stainless steel lift bar to prevent door curtain bounce, improve bottom seal life expectancy and to avoid false door ajar signals.

All injection molded roll-up door wear components will be constructed of Type 6 nylon.

Each roll-up door will have a 3.00 inch diameter balancer/tensioner drum to assist in lifting the door.

The header for the roll-up door assembly will not exceed 4.00".

A heavy-duty magnetic switch will be used for control of open compartment door warning lights.

### **REAR BUMPER**

An aluminum rub rail will be provided at the rear of the unit. It will extend the full width of the body.

### **SCUFFPLATE**

A brushed stainless steel scuffplate will be furnished around the opening for the DEF fill door to prevent chipping and stain.

### **COMPARTMENT LIGHTING**

There will be seven (7) compartments that include Amdor, Model AY-LB-12HW0\*\*, white 12 volt DC LED compartment light strips with 45 degree brackets. The light manufacturers electrical connectors will be included in the circuit. The lights will be mounted with mechanical fasteners.

There will be two (2) strip lights installed vertically in each compartment opening per the latest NFPA requirements.

The lights will be activated when the battery switch is on and the respective compartment door is opened.

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**MOUNTING TRACKS**

There will be recessed tracks installed vertically to support the adjustable shelf(s).

Tracks will not protrude into any compartment in order to provide the greatest compartment space and widest shelves possible.

The tracks will be provided in each compartment except for the one that contains the pump operator's panel.

**ADJUSTABLE SHELVES**

There will be six (6) shelves with a capacity of 500 lb provided.

The shelf construction will consist of .188" aluminum painted spatter gray with 2.00" sides.

Each shelf will be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves will be held in place by .12" thick stamped plated brackets and bolts.

The location(s) will be in RS3 in the upper third, in RS1 in the upper third, in LS2 centered between the floor and ceiling, in LS3 in the upper third, in LS1 in the upper third and in RS2 centered between the floor and the ceiling to the left of the partition.

**SLIDE-OUT FLOOR MOUNTED TRAY**

There will be three (3) floor mounted slide-out tray(s) provided.

Each tray will have 2.00" high sides and a minimum capacity rating of 500 lb in the extended position.

Each tray will be constructed of aluminum painted spatter gray.

There will be two undermount-roller bearing type slides rated at 250 lb each provided. The pair of slides will have a safety factor rating of 2.

To ensure years of dependable service, the slides will be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides will require no more than a 50lb force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file will have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance will be provided upon request.

Automatic locks will be provided for both the "in" and "out" positions. The trip mechanism for the locks will be located at the front of the tray for ease of use with a gloved hand.

The location(s) will be RS1, RS3 and LS1.

**DRAWER ASSEMBLY**

A slide-out drawer assembly will be installed LS3.

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The clear dimensions starting at the top of the cabinet with the first drawer will be 3.00" with a face plate that is 4.00" high x 21.00" deep. The clear dimensions of the second drawer will be 3.75" with a face plate that is 4.00" high x 21.00" deep. The clear dimensions of the third drawer will be 5.75" with a face plate that is 6.00" high x 21.00" deep. The clear dimensions of the fourth drawer will be 7.75" with a face plate that is 8.00" high x 21.00" deep. Each drawer will be the same width and not exceed 36.00".

The drawers will have a capacity of 250 pounds.

The drawers will be mounted in a cabinet housing constructed of light gray powder coated aluminum with anodized aluminum frames. The housing will be 24.00" deep, and completely enclose the drawer.

A full-length aluminum extruded rail will be provided at the top edge of each drawer. This rail will act as the latching mechanism as well as the handle for each drawer.

There will be a total of one (1) provided.

#### **SWING OUT TOOLBOARD**

A swing out aluminum toolboard will be provided.

It will be a minimum of 0.188" thick with .203" diameter holes in a pegboard pattern with 1.00" centers between holes.

A 1.00" x 1.00" aluminum tube frame will be welded to the edge of the pegboard.

The board will be mounted on a pivoting device at the front of the compartment on the top and bottom to allow easy movement in and out of the compartment. The maximum tool load will be 400 lb.

The board will have positive lock in the stowed and extended position.

The board will have a D-ring handle to secure it in the stowed position.

The board will be mounted on adjustable tracks from front to back within the compartment.

One (1) toolboard(s) will be provided. The toolboard(s) will be spatter gray painted and installed in RS2 ahead of vertical partition.

#### **VERTICAL COMPARTMENT PARTITION**

One (1) partition will be provided.

The partition construction will consist of body material painted spatter gray. Each partition will be the full vertical height of the compartment.

The location(s) will be in RS2, 60.00" from the forward door frame.

#### **PEGBOARD**

There will be 0.188" thick aluminum pegboard spatter gray painted will be installed on the back wall of one (1) compartments. It will be mounted using two (2) horizontal tracks. Retainers will be used to

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mount the pegboard to the tracks. The pegboard will be installed on the back wall. The holes will be .203" diameter, punched 1.00" on center. Pegboard will be provided in the following compartments: RS2.

**REAR WALL**

The entire rear surface of the apparatus and all the doors will be covered with smooth aluminum.

**RUB RAIL**

Bottom edge of the side compartments will be trimmed with a bright aluminum extruded rub rail.

Trim will be 3.12" high with 1.50" flanges turned outward for rigidity.

The rub rails will not be an integral part of the body construction, which allows replacement in the event of damage.

**BODY FENDER CROWNS**

Polished stainless steel fender crowns will be provided around the rear wheel openings.

An unpainted fender liner will be provided to avoid paint chipping. The liners will be removable to aid in the maintenance of rear suspension components.

A dielectric barrier will be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

The fender crowns will be held in place with stainless steel screws that thread directly into a composite nut and not directly into the parent body sheet metal to eliminate dissimilar metals contact and greatly reduce the chance for corrosion.

**HARD SUCTION HOSE**

Hard suction hose will not be required.

**HANDRAILS**

The handrails will be 1.25" diameter knurled aluminum to provide a positive gripping surface.

Chrome plated end stanchions will support the handrail. Plastic gaskets will be used between end stanchions and any painted surfaces.

Drain holes will be provided in the bottom of all vertically mounted handrails.

Handrails will be provided to meet current edition of applicable NFPA standards. The handrails will be installed as noted on the sales drawing.

There is to be no step below the right side running board.

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**ADDITIONAL HANDRAIL**

Four (4) handrails will be mounted on boom support 4-way aluminum privacy panel ahead of pump panel to help access crosslays, two at rear of truck, one each side for the recessed camper style steps.. The handrail(s) will be constructed of knurled aluminum.

**AIR BOTTLE STORAGE**

A total of four (4) air bottle compartments will be provided and located on the left side ahead of the rear wheel, on the left side behind the rear wheel, on the right side ahead of the rear wheel and on the right side behind the rear wheel. The air bottle compartment will be a minimum of 15.00" wide x 7.50" tall x 26.00" deep. A painted stainless steel door with a Southco raised trigger C2 chrome lever latch will be provided to contain the air bottle. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, black rubber matting will be provided.

**EXTENSION LADDER**

There will be a 35' three (3) section aluminum Duo-Safety Series 1225-A extension ladder provided.

**AERIAL EXTENSION LADDER**

There will be one (1) 24' two (2) section aluminum Series 900-A extension ladder(s) provided and located in the ladder storage compartment.

**ROOF LADDERS**

There will be two (2) 16' aluminum Duo-Safety Series 875-A roof ladders provided.

**ADDED ROOF LADDER**

There will be one (1) aluminum, 14' Duo Safety 875-DR roof ladder provided behind boom sign driver side of aerial ladder..

**AERIAL FOLDING LADDER**

There will be one (1) 10' aluminum Duo-Safety Series 585-A folding ladder(s) provided and located in the ladder storage compartment.

**GROUND LADDER STORAGE**

Ladder tunnels will be provided at the rear of the apparatus on either side of the turntable.

Tunnels will be capable of holding up to two (2) two-section pumper style ladders on each side not in excess of 22.00" wide or 5-13/16" in thickness.

The ladders will be held captive top and bottom by stainless steel tracks. A polyethylene wear plate will be provided to prevent ladders from being scuffed by contacting metal parts. The plate will be mounted to the bottom of the entrance area of the ladder tunnels.

All ladders will be removable individually without having to remove any other ladder.

A Velcro® strap will be provided to help contain the ladders.

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A smooth aluminum door with a chrome D-Ring latch will be provided on each ladder tunnel.

**12' PIKE POLES**

There will be two (2) Fire Hooks Unlimited Model RH-12' New York Roof Hook with a fiberglass shaft and pry end provided. The pike pole(s) will be stored in tubular holders located in the ground ladder storage compartment.

**8' PIKE POLE**

There will be two (2) Fire Hooks Unlimited APH-8, 8' pike pole(s) with fiberglass handles and gas shut off end provided.

**6' PIKE POLE**

There will be two (2) Fire Hooks Unlimited Model APH-6, 6' pike pole(s) with fiberglass handles provided.

**PIKE POLE PROVIDED BY FIRE DEPARTMENT**

The pike poles are not on the apparatus as manufactured. The fire department will provide and mount the pike poles.

There will be two (2) pike pole(s) provided. The pike pole(s) will be a Fire Hooks Unlimited 4' New York Roof Hook with D handle.

**PIKE POLE STORAGE IN TORQUE BOX/LADDER STORAGE**

There will be aluminum tubing provided in the torque box/ladder storage area for a total of six (6) pike poles. The pike pole tube(s) will be notched to allow a New York style pike pole to fit in the tube.

If the head of a pike pole can come into contact with a painted surface, a stainless steel scuffplate will be provided.

**STEPS**

A folding step will be provided on the front of each fender compartment for access to the hose bed. The step will be bright finished, non-skid with a black tread coating on the stepping surface. The step will incorporate an LED light to illuminate the stepping surface. The step can be used as a hand hold with two openings wide enough for a gloved hand.

**PULL-OUT/DROP DOWN STEP**

A total of two (2) pull-out and drop down, camper style step(s) will be provided on the rear wall of the body, located on the left and right side to provide easy access to the rear hose bed(s).

Each step will be 19.00" wide x 8.00" deep. The stepping surface will be bright aluminum treadplate.

Each step will include an Amdor LumaBar, Model AY-LB-12HW0\*\* to illuminate the ground area beneath the step.

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Each step will include a white 12 volt DC LED light to illuminate the stepping surface.

A rubber draw latch will be provided to retain the step in the stowed position.

Four (4) additional folding steps will be located two additional step's, each side of truck, on front body bulkheads.. The step(s) will be bright finished, non-skid with a black tread coating on the stepping surface. Each step will incorporate an LED light to illuminate the stepping surface. The step(s) can be used as a hand hold with two openings wide enough for a gloved hand.

### **STIRRUP STEP**

There will be one (1) stirrup step(s) provided below the body. Each step will be designed with a grip pattern punched into bright aluminum treadplate material, providing support, slip resistance and drainage. The step(s) will be a bolt-on design and provide an 18.50" wide x 5.00" deep stepping surface.

The step(s) will be located under passenger side running board.

The stirrup step(s) will be lit by a white 12 volt DC LED light provided on the step.

The additional step(s) lights will be activated by the same means as the standard step lights.

### **PUMP COMPARTMENT**

The pump compartment will be separate from the hose body and compartments so that each may flex independently of the other. The pump compartment will be constructed of the same material as the body compartmentation.

The pump compartment substructure will be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.

The pump compartment will be mounted on the chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist.

Pump compartment, pump, plumbing and gauge panels will be removable from the chassis in a single assembly.

### **PUMP MOUNTING**

Pump will be mounted to a substructure which will be mounted to the chassis frame rail using rubber isolators. The mounting will allow chassis frame rails to flex independently without damage to the fire pump.

### **LEFT SIDE PUMP CONTROL PANELS**

All pump controls and gauges will be located at the left (driver's) side of the apparatus and properly identified.

Layout of the pump control panel will be ergonomically efficient and systematically organized.

The pump operator's control panel will be removable in two (2) main sections for ease of maintenance:

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The upper section will contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable). Sub panels will be removable from the face of the pump panel for ease of maintenance. Below the sub panels will be located all valve controls and line pressure gauges.

The lower section of the panel will contain all inlets, outlets, and drains.

All push/pull valve controls will have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods will be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls will be capable of locking in any position. The control rods will pull straight out of the panel and will be equipped with universal joints to eliminate binding.

### **IDENTIFICATION TAGS**

The identification tag for each valve control will be recessed in the face of the tee handle.

All discharge outlets will have color coded identification tags, with each discharge having its own unique color. Color coding will include the labeling of the outlet and the drain for each corresponding discharge.

All line pressure gauges will be mounted directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification. The gauge and rod guide casting will be removable from the face of the pump panel for ease of maintenance. The casting will be color coded to correspond with the discharge identification tag.

All remaining identification tags will be mounted on the pump panel in chrome plated bezels.

The pump panel on the right (passenger's) side will be removable with lift and turn type fasteners.

Trim rings will be installed around all inlets and outlets.

### **PUMP**

Pump will be a Waterous CSU, 2000 gpm single (1) stage midship mounted centrifugal type.

Pump will be the class "A" type.

Pump will deliver the percentage of rated discharge at pressures indicated below:

- 100 percent of rated capacity at 150 psi net pump pressure.
- 70 percent of rated capacity at 200 psi net pump pressure.
- 50 percent of rated capacity at 250 psi net pump pressure.

Pump body will be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings).

Pump will be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping.

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Pump case halves will be bolted together on a single horizontal face to minimize a chance of leakage and facilitate ease of reassembly. No end flanges will be used.

Discharge manifold of the pump will be cast as an integral part of the pump body assembly and will provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency.

The three (3) 3.50" openings will be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the discharge manifold.

Impeller shaft will be stainless steel, accurately ground to size. It will be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller will have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply.

Bearings will be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. No special or sleeve type bearings will be used.

Pump will be equipped with a self-adjusting, maintenance-free, mechanical shaft seal.

The mechanical seal will consist of a flat, highly polished, spring fed carbon ring that rotates with the impeller shaft. The carbon ring will press against a highly polished stainless steel stationary ring that is sealed within the pump body.

In addition, a throttling ring will be pressed into the steel chamber cover, providing a very small clearance around the rotating shaft in the event of a mechanical seal failure. The pump performance will not deteriorate, nor will the pump lose prime, while drafting if the seal fails during pump operation.

Wear rings will be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear.

### **PUMP TRANSMISSION**

The pump transmission will be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump will be through a high strength Morse HY-VO silent drive chain. By using a chain rather than gears, 50 percent of the sprocket will be accepting or transmitting torque, compared to two (2) or three (3) teeth doing all the work.

Drive shafts will be 2.35" diameter hardened and ground alloy steel and supported by ball bearings. The case will be designed to eliminate the need for water cooling.

### **PUMPING MODE**

An interlock system will be provided to ensure that the pump drive system components are properly engaged so that the apparatus can be safely operated. The interlock system will be designed to allow stationary pumping only.

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**AIR PUMP SHIFT**

Pump shift engagement will be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control will also be located on the left side pump panel.

Two (2) indicator lights will be provided adjacent to the pump shift inside the cab. One (1) green light will indicate the pump shift has been completed and be labeled "pump engaged". The second green light will indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light will be labeled "OK to pump".

The pump shift will be interlocked to prevent the pump from being shifted out of gear when the chassis transmission is in gear to meet NFPA requirements.

The pump shift control in the cab will be illuminated to meet NFPA requirements.

**TRANSMISSION LOCK-UP**

The direct gear transmission lock-up for the fire pump operation will engage automatically when the pump shift control in the cab is activated.

**AUXILIARY COOLING SYSTEM**

A supplementary heat exchange cooling system will be provided to allow the use of water from the discharge side of the pump for cooling the engine water. The heat exchanger will be a separate unit. It will be installed in the pump or engine compartment with the control located on the pump operator's control panel. The exchanger will be plumbed to the master drain valve.

**PUMP INTAKE RELIEF VALVE**

An Akron Style 53 relief valve will be installed on the suction side of the pump preset at 125 psig.

The relief valve will have a working range of 50 psi to 250 psi.

The outlet will terminate below the frame rails with a 2.50" National Standard hose thread adapter and will have a "do not cap" warning tag.

The relief valve pressure control will be located behind the right side pump panel with a stainless steel access door.

**PRESSURE CONTROLLER**

A FRC Pump Boss 500 electronic pressure controller with one (1) 600 PSI transducer on the pump discharge will be provided. All readouts will be standard PSI.

When a single 300 psi or single 600 psi pressure transducer is selected the transducer is installed in the discharge side of the water pump. The transducer continuously monitors pump pressure sending a signal to the electronic pressure controller.

When a dual 600 psi pressure transducer is selected the transducer are installed in the discharge side and intake side of the water pump. The discharge transducer continuously monitors pump pressure

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sending a signal to the electronic pressure controller. The intake transducer continuously monitors the pump intake sending a signal to the electronic pressure controller.

The pressure controller can be used in two (2) modes of operation, RPM mode and pressure modes. The controller will be programmed to turn on/default to RPM Setting mode.

In RPM mode, the controller can be activated after vehicle parking brake has been set. When in this mode, the controller will maintain the set engine speed, regardless of engine load (within engine operation capabilities).

In pressure mode, the controller can be activated after vehicle parking brake has been set. When in this mode, the controller will automatically maintain the discharge pressure set by the operator (within the discharge capabilities of the pump and water supply) regardless of flow.

A 2.00" diameter throttle control knob with no mechanical stops, a serrated grip, and a red idle push button in the center will be a integrated/part of the pressure controller. The throttle control knob will be programmed for Clockwise rotation to increase engine speed.

Individual LED indicators for ok to pump, throttle ready, pressure mode and rpm mode will be located on the pressure controller for easy viewing.

Safety features include recognition of low water and no water conditions with an automatic programmed response and a push button to return the engine to idle.

An additional audible alarm will NOT BE provided.

The pressure controller screen will be LCD. The LCD screen and LED intensity will be automatically adjust for day and nighttime operation. The LCD screen intensity can also be manually adjusted if needed.

The following information will be provided/displayed on the LCD screen:

- Engine RPM
- Check engine and stop engine warning indicators
- Engine oil pressure
- Engine coolant temperature
- Transmission Temp
- Battery voltage
- Operating mode (RPM or pressure)
- Pressure or RPM setting

On screen messaging show diagnostic and warning messages as they occur. It will show apparatus information, stored data, and program options when selected by the operator. It will monitor inputs outputs and support audible and visual warning alarms for the following conditions:

- High battery voltage

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- Low battery voltage/engine off
- Low battery voltage/engine running
- High water pump temperature
- Low engine oil pressure
- High engine coolant temperature
- No engine response (visual alarm only)

The pressure controller will store the accumulated operating hours for the pump and engine. These items are to be displayed within the pressure controller menu.

The pressure controller will include a USB port on the back of the controller for easy software upgrades if needed.

### **PRIMING PUMP**

The priming pump will be a Trident Emergency Products compressed air powered, high efficiency, multistage venturi based AirPrime System, conforming to standards outlined in the current edition of applicable NFPA standards.

All wetted metallic parts of the priming system are to be of brass and stainless steel construction.

One (1) priming control will open the priming valve and start the pump primer.

### **PUMP MANUALS**

There will be a total of two (2) pump manuals provided by the pump manufacturer and furnished with the apparatus. The manuals will be provided by the pump manufacturer in the form of two (2) electronic copies. Each manual will cover pump operation, maintenance, and parts.

### **PLUMBING, STAINLESS STEEL AND HOSE**

All inlet and outlet lines will be plumbed with either stainless steel pipe, flexible polypropylene tubing or synthetic rubber hose reinforced with hi-tensile polyester braid. All hose's will be equipped with brass or stainless steel couplings. All stainless steel hard plumbing will be a minimum of a schedule 10 wall thickness.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping will be equipped with victaulic or rubber couplings.

Plumbing manifold bodies will be ductile cast iron or stainless steel.

All piping lines are to be drained through a master drain valve or will be equipped with individual drain valves. All drain lines will be extended with a hose to drain below the chassis frame.

All water carrying gauge lines will be of flexible polypropylene tubing.

All piping, hose and fittings will have a minimum of a 500 PSI hydrodynamic pressure rating.

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**FOAM SYSTEM PLUMBING**

All piping that is in contact with the foam concentrate or foam/water solution will be stainless steel. The fittings will be stainless steel or brass. Cast iron pump manifolds will be allowed.

**MAIN PUMP INLETS**

A 6.00" pump manifold inlet will be provided on each side of the vehicle. The suction inlets will include removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

**MAIN PUMP INLET CAP**

The main pump inlets will have National Standard Threads with a long handle chrome cap.

The cap will be the Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

**VALVES**

All ball valves will be Akron® Brass. The Akron valves will be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.

Valves will have a **ten (10) year** warranty.

The location of the valve for the one (1) inlet will be recessed behind the pump panel.

**INLET CONTROL**

The side auxiliary inlet(s) will incorporate a quarter-turn ball valve with the control located at the inlet valve. The valve operating mechanism will indicate the position of the valve.

**LEFT SIDE INLET**

There will be one (1) auxiliary inlet with a 2.50" valve at the left side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet will be provided with a strainer, chrome swivel and plug.

**RIGHT SIDE INLET**

There will be one (1) auxiliary inlet with a 2.50" valve at the right side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet will be provided with a strainer, chrome swivel and plug.

**FRONT INLET PROVISION**

Provisions for a front inlet will be provided on the right side pump suction manifold. Flange will be capped off for possible addition of front inlet at a later date.

**INLET BLEEDER VALVE**

A 0.75" bleeder valve will be provided for each side gated inlet.

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The valves will be located behind the panel with a "T" swing style handle control extended to the outside of the panel.

The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage.

The water discharged by the bleeders will be routed below the chassis frame rails.

### **TANK TO PUMP**

The booster tank will be connected to the intake side of the pump with stainless steel piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line will run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling will be included in this line to prevent damage from vibration or chassis flexing.

A check valve will be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

### **TANK REFILL**

A 1.50" combination tank refill and pump re-circulation line will be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

### **DISCHARGE OUTLET CONTROLS**

The discharge outlets will incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism will indicate the position of the valve.

If a handwheel control valve is used, the control will be a minimum of a 3.90" diameter stainless steel handwheel with a dial position indicator built into the center of the handwheel.

Any 3.00 inch or larger discharge valve will be a slow-operating valve to meet current edition of applicable NFPA standards.

### **LEFT SIDE DISCHARGE OUTLETS**

One (1) discharge outlet with a 2.50" valve will be provided on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

### **LEFT SIDE OUTLET ELBOWS**

The 2.50" discharge outlets located on the left side pump panel will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

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**RIGHT SIDE DISCHARGE OUTLET**

One (1) discharge outlet with a 2.50" valve will be provided on the right side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

**RIGHT SIDE OUTLET ELBOWS**

The 2.50" discharge outlets located on the right side pump panel will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

There will be a 4.00" discharge outlet with a 3.00" valve with a 3.00" ball, installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread adapter. This discharge outlet will be actuated with a handwheel control with position indicator at the pump operator's control panel.

**ADDITIONAL RIGHT SIDE OUTLET ELBOWS**

The 4.00" outlet will be furnished with a 4.00" (F) National Standard hose thread x 5.00" Storz elbow adapter with Storz cap.

**FRONT DISCHARGE OUTLET**

There will be one (1) 1.50" discharge outlet piped to the front of the apparatus and located in the center bumper tray.

Plumbing will consist of 2.00" piping and flexible hose with a 2.00" ball valve with control at the pump operator's panel. A fabricated weldment made of stainless steel pipe will be used in the plumbing where appropriate. The piping will terminate with a 1.50" NST with 90 degree stainless steel swivel.

There will be automatic drains provided at all low points of the piping.

**DISCHARGE CAPS/ INLET PLUGS**

Chrome plated, rocker lug, caps with vinyl covered cables will be furnished for all discharge outlets 1.00" thru 3.00" in size, besides the pre-connected hose outlets.

Chrome plated, rocker lug, plugs with vinyl covered cables will be furnished for all auxiliary inlets 1.00" thru 3.00" in size.

The caps and plugs will incorporate a thread design to automatically relieve stored pressure in the line when disconnected.

**OUTLET BLEEDER VALVE**

A 0.75" bleeder valve will be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

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The valves will be located behind the panel with a T swing style handle control extended to the outside of the side pump panel.

The handles will be chrome plated and provide a visual indication of valve position.

The T swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage.

Bleeders will be located at the bottom of the pump panel. They will be properly labeled identifying the discharge they are plumbed in to.

The water discharged by the bleeders will be routed below the chassis frame rails.

**AERIAL WATERWAY OUTLET**

The aerial waterway will be plumbed from the water pump to the aerial device waterway with 5.00" pipe and a 4.00" Akron valve.

The valve will be controlled with a Pierce large handwheel with indicator located at the pump operator's panel.

**CROSSLAY HOSE BEDS**

Two (2) crosslays with 1.50" outlets will be provided. Each bed to be capable of carrying 200' of 1.75" double jacketed hose and will be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay controls will be at the pump operator's panel.

The center crosslay dividers will be fabricated of 0.25" aluminum and will provide adjustment from side to side. The divider will be unpainted with a brushed finish.

Vertical scuffplates constructed of polished stainless steel will be provided at the front and rear ends of the bed on each side of vehicle.

Crosslay bed flooring will consist of removable perforated brushed aluminum.

**2.50" CROSSLAY HOSE BED**

One (1) crosslay with 2.50" outlets will be provided. This bed to be capable of carrying 200' of 2.50" double jacketed hose and will be plumbed with 2.50" i.d. pipe and gated with a 2.50" quarter turn ball valve.

Outlet to be equipped with a 2.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay control will be at the pump operator's panel.

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When used in conjunction with other crosslay/speedlay/deadlay configurations, a center crosslay divider, when needed, will be fabricated of .25" aluminum and will provide adjustment from side to side. The divider will be unpainted with a brushed finish. The remainder of the crosslay bed will be painted job color.

Polished stainless steel vertical scuffplates will be provided at hose bed ends (each side of vehicle). Bottom of hose bed ends (each side) will also be equipped with a polished stainless steel scuffplate.

Crosslay bed flooring will consist of removable perforated brushed aluminum.

**CROSSLAY HOSE RESTRAINT**

A 2.00" black nylon webbing design restraint will be provided at each of the ends of three (3) crosslay(s) to secure the hose during travel. The webbing assembly is to be attached at the bottom of the crosslays, with footman loops and a permanent attachment, and is to attach at the top outside corners with seat belt buckles. The female end of the seat buckle will be permanently attached at the top corner of the opening. A bar will be attached to the female ends of the seat belt buckles to allow a single pull release. A single orange nylon strap will be attached to the bar for releasing the buckles on the webbing.

**CROSSLAY/DEADLAY HOSE RESTRAINT**

The crosslay/deadlay hosebed(s) will have three (3) 2.00" wide black nylon straps with Velcro fasteners provided across the top to secure the hose during travel. The straps will extend from the front to back across the top of the hosebed(s).

**HUSKY 3/12 FOAM SYSTEM PLUMBING (FUTURE INSTALLATION)**

Foam manifold/piping will be provided for the future installation of a Husky 3/12 foam system. The foam system will be plumbed to 1- Front bumper outlet 3- Crosslays discharges.

A foam manifold will be provided for the foam ready discharges. The plumbing from the water pump to the foam manifold will be designed to allow a Husky 3 or Husky 12 foam system to be added without much unnecessary rework.

Space will be provided on the pump panel for the possible addition of the foam system controls.

**FOAM TANK**

The foam tank will be an integral portion of the polypropylene water tank. The cell will have a capacity of 20 gallons of foam with the intended use of Class A foam. The foam cell will not reduce the capacity of the water tank. The foam cell will have a screen in the fill dome and a breather in the lid.

**FOAM TANK DRAIN**

The foam tank drain will be a 1.00" drain valve located inside the pump compartment accessible through a door on the right side pump panel.

**PUMP PANEL CONFIGURATION**

The pump panel configuration will be arranged and installed in an organized manner that will provide user-friendly operation.

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**PUMP OPERATOR'S PLATFORM**

A pull out, flip down platform will be provided at the pump operator's control panel.

The front edge and the top surface of the platform will be made of DA finished aluminum with a Morton Cass insert.

The platform will be approximately 13.75" deep when in the stowed position and approximately 22.00" deep when extended. The platform stepping surface will be 35.00" wide. The platform will lock in the retracted and the extended position.

The sides, bottom and rear portions of the support assembly will be painted to match lower job color.

The platform will be wired to the "step not stowed" indicator in the cab.

**PUMP OPERATOR'S PLATFORM PERIMETER LIGHT**

There will be an On Scene Solutions, Model Night Stick Access, 20.00" white 12 volt DC LED strip light provided to illuminate the ground area.

**PUMP AND GAUGE PANEL**

The pump and gauge panels will be constructed of aluminum with a painted FormCoat black finish. A polished aluminum trim molding will be provided around each panel.

**PUMP ACCESS**

**Right Side Panel**

The right side upper pump panel will be removable.

**Panel Fastener**

The removable panels will be secured with black swell latch.

The left side pump panels will be attached with screws.

The right side lower pump panel (drain bank) will be attached with screws.

**PUMP COMPARTMENT LIGHT**

There will be two (2) Whelen®, Model 3SC0CDCR, 3.00" white 12 volt DC LED light(s) with Whelen, Model 3FLANGEC, flange(s) installed in the pump compartment.

Engine monitoring graduated LED indicators will be incorporated with the pressure controller.

Also provided at the pump panel will be the following:

- Master Pump Drain Control

**THROTTLE READY GREEN INDICATOR LIGHT**

There will be a green indicator light integrated with the pressure governor and/or engine throttle installed on the pump operators panel that is activated when the pump is in throttle ready mode.

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**OK TO PUMP INDICATOR LIGHT**

There will be a green indicator light installed on the pump operators panel that is activated when the pump is in Ok To Pump mode.

**AIR HORN SWITCH**

An air horn control switch will be provided at the pump operator's control panel. This switch will be momentary red and properly labeled. The switch will be located within easy reach of the operator in the electrical switch panel.

**VACUUM AND PRESSURE GAUGES**

The pump vacuum and pressure gauges will be liquid filled and manufactured by Class 1 Incorporated.

The gauges will be a minimum of 4.00" in diameter and will have white faces with black lettering, with a pressure range of 30.00"-0-600#.

Gauge construction will include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

The pump pressure and vacuum gauges will be installed adjacent to each other at the pump operator's control panel.

Test port connections will be provided at the pump operator's panel. One (1) will be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They will have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They will be marked with a label.

This gauge will include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

**PRESSURE GAUGES**

The individual "line" pressure gauges for the discharges will be Class 1 interlube filled.

They will be a minimum of 2.00" in diameter and have white faces with black lettering.

Gauge construction will include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

Gauges will have a pressure range of 30"-0-400#.

The individual pressure gauge will be installed as close to the outlet control as practical.

This gauge will include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

**WATER LEVEL GAUGE**

There will be an electronic water level gauge provided on the operator's panel that registers water level by means of five (5) colored LED lights. The lights will be durable, ultra-bright five (5) LED design viewable through 180 degrees. The water level indicators will be as follows:

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- 100 percent = Green
- 75 percent = Yellow
- 50 percent = Yellow
- 25 percent = Yellow
- Refill = Red

The light will flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights will flash sequentially when the water tank is empty.

The level measurement will be based on the sensing of head pressure of the fluid in the tank.

The display will be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design will provide complete protection from water and environmental elements. An industrial pressure transducer will be mounted to the outside of the tank. The field calibratable display measures head pressure to accurately show the tank level.

The main water level gauge will be powered with battery switch.

There will be a Hale part number 106877, 4-light driver module included with this installation to power additional water level gauges.

The remote level lights will be energized when pump is in gear.

**WATER LEVEL GAUGE - ADDITIONAL**

A water level gauge system will be provided behind crew cab doors, above cab handrail.. Each system will be provided with four (4) Whelen® Model 50\*02Z\*R Linear LED lights with chrome trim. The total quantity of water level gauge systems to be provided will be two (2).

The lights will be mounted and indicate the following:

- The top green light - water level full.
- Next blue light - water level 3/4 full.
- Next amber light - water level 1/2 full
- Bottom red light - water level 1/4 full when on solid and will flash when empty.
- The lens color(s) to be the same as the LEDs.

The flash rate will be determined by the main water tank sensor.

The above system will function similar to the standard five (5) light at the pump panel. The system will activate pump is in gear.

**FUTURE FOAM LEVEL GAUGE**

Provision will be provided in the foam cell for the future addition of a foam system and level gauge.

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**LIGHT SHIELD**

There will be a polished, 16 gauge stainless steel light shield installed over the pump operator's panel.

- There will be 12 volt DC white LED lights installed under the stainless steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights will be activated by the pump panel light switch. Additional lights will be included every 18.00" depending on the size of the pump house.
- One (1) pump panel light will come on when the pump is in ok to pump mode.

The switch panel will be lit when the parking brake is set. This is to afford the operator illumination when first approaching the control panel.

**AIR HORN SYSTEM**

Two (2) Grover air horns will be recessed in the front bumper.

The air horns will be chrome.

The air horn system will be piped to the air brake system wet tank utilizing 0.38" tubing. A pressure protection valve will be installed to prevent the loss of air in the brake system.

**Air Horn Location**

The air horns will be located on each side of the bumper, just outside of the frame rails.

**Air Horn Control**

The air horn(s) will be activated by the following:

- Right side lanyard. The lanyard to be vinyl covered 0.12" cable.
- Steering wheel horn ring with electric/air horn selector switch

**ELECTRONIC SIREN**

A Whelen, Model: 295SLSC1, electronic siren with a plug-in, detachable noise canceling microphone will be provided.

This siren to be active when the battery switch is on and that emergency master switch is on.

**ELECTRIC SIREN, LOCATION**

Siren head will be mounted Switch panel POS A .

**ELECTRONIC SIREN CONTROL**

The electronic siren will be activated by the following:

- The right side push button.

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**SPEAKER**

There will be one (1) Whelen®, Model SA315P, black nylon composite, 100-watt, speaker with through bumper mounting brackets and polished stainless steel grille provided. The speaker will be connected to the siren amplifier.

The speaker(s) will be recessed in the center of the front bumper.

**AUXILIARY MECHANICAL SIREN**

There will be a Federal Signal Model Q2B mechanical siren furnished and installed in the front of the apparatus.

The Q2B will be chrome finish.

The siren will have a 2-gauge cable connected to a power solenoid that is connected by a 2-gauge cable ran battery direct to the primary chassis batteries and will be labeled Q2B+ at the battery. The power solenoid will only be enabled when the emergency master switch is on.

The siren will have a 2-gauge ground wire connected to the chassis battery stud. The cable will be labeled Q2B- at the battery.

The mechanical siren will be mounted on the bumper deck plate. It will be mounted on the left side. A reinforcement plate will be furnished to support the siren.

**MECHANICAL SIREN CONTROL**

The mechanical siren will be activated by the following:

- Linemaster part number 632-SC36 as the left side foot switch.
- Linemaster part number 632-SC36 as the right side foot switch.

A momentary chrome push button switch will be included in the right side dash panel to activate the siren brake.

**ACTIVATION FOR WARNING LIGHTS INTENSITY**

When parking brake is set, the designated Whelen® warning lights on the cab and the warning lights on the body will transition to a low power intensity by default.

In order for the activation of low power mode of the warning lights, the battery switch, the ignition switch, the emergency master switch, must be on, and the parking brake set.

The low power intensity mode will be reset when any of the above conditions are not met.

A switch will be provided to over ride the low power intensity mode and allow for full power intensity when parking brake is set. The over ride switch will be disabled and reset with release of parking brake

**FRONT ZONE UPPER WARNING LIGHTS**

There will be two (2) 21.50" Whelen® Freedom™ IV LED lightbars mounted on the cab roof, one (1) on each side, above the left side and right side doors, facing forward.

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The left side lightbar will include the following:

- One (1) red flashing LED module in the outside end position.
- One (1) red flashing LED module in the outside front corner position.
- One (1) red flashing LED module in the outside front position.
- One (1) white flashing LED module in the inside front position.
- One (1) red flashing LED module in the inside front corner position.

The right side lightbar will include the following:

- One (1) red flashing LED module in the inside front corner position.
- One (1) white flashing LED module in the inside front position.
- One (1) red flashing LED module in the outside front position.
- One (1) red flashing LED module in the outside front corner position.
- One (1) red flashing LED module in the outside end position.

There will be clear lenses included on the lightbar.

Each light bar will have the low intensity mode wires connected to the controlling circuit.

There will be a switch in the cab on the switch panel to control the lightbars.

The white LED module will be deactivated when the parking brake is applied.

The red flashing forward facing and the two (2) red flashing inside front corner LED modules may be load managed when the parking brake is applied.

### **FRONT ZONE LOWER LIGHTS**

There will be two (2) pair of Whelen, Model M6\*\*, LED lights installed on the cab face above the headlights, in a common bezel matching the one for the headlamps.

- The driver's side front outside warning light to be red
- The driver's side front inside warning light to be red
- The passenger's side front inside warning light to be red
- The passenger's side front outside warning light to be red
- The color of the lenses will be clear

There will be a switch located in the cab on the switch panel to control the lights.

Each light will have the low intensity mode wire connected to the controlling circuit.

### **DAYTIME RUNNING LIGHTS (HEADLIGHTS)**

The low-beam headlights used as daytime running lights will be activated with the following measures:

- Ignition switch is turned on
- Parking brake is released

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These lights will be deactivated with any one of the following measures:

- Headlight switch is turned on
- High-beam flash is turned on
- Parking brake is set

**HEADLIGHT FLASHER**

The high beam headlights will flash alternately between the left and right side.

There will be a switch installed in the cab on the switch panel to control the high beam flash. This switch will be live when the battery switch and the emergency master switches are on.

The flashing will automatically cancel when the hi-beam headlight switch is activated or when the parking brake is set.

**SIDE ZONE LOWER LIGHTING LOW INTENSITY**

There will be six (6) Whelen®, Model M6\*\*, 4.31" high x 6.75" long x 1.37" deep flashing LED warning lights with chrome trim installed per the following:

- Two (2) lights located, one (1) each side on the bumper extension. The driver's side, side front light to include red warning LEDs and the passenger's side, side front light to include red warning LEDs.
- Two (2) lights located, one (1) each side above the front wheels. The driver's side, side middle light to include red warning LEDs and the passenger's side, side middle light to include red warning LEDs.
- Two (2) lights located, one (1) each side above rear wheels. The driver's side, side rear light to include red warning LEDs and the passenger's side, side rear light to include red warning LEDs.
- The warning light lens color(s) to be clear.

There will be a switch in the cab on the switch panel to control the lights.

Each light will have the low intensity mode wire connected to the controlling circuit.

Any flashing white lights will be disabled when the parking brake is set.

**REAR ZONE LOWER LIGHTING**

There will be two (2) Whelen®, Model M6\* LED flashing warning lights with chrome trim located at the rear of the apparatus.

- The driver's side rear light to be red
- The passenger's side rear light to be red

The lens color(s) to be clear.

There will be a switch located in the cab on the switch panel to control the lights.

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The light(s) will have the low intensity mode wire connected to the controlling circuit.

**REAR WARNING LIGHTS**

There will be two (2) Whelen®, Model M6\*\*, 4.31" high x 6.75" wide x 1.37" deep flashing LED warning light(s) with chrome trim provided at the rear of the apparatus, rear of truck, mid height, one each side.

The light(s) to include red flashing LEDs. The warning light lens color(s) to be clear.

These light(s) will be controlled with the rear upper warning switch.

The light(s) may be load managed when the parking brake is applied.

The light(s) will have the low intensity mode wire connected to the controlling circuit.

**REAR/SIDE ZONE UPPER WARNING LIGHTS**

There will be two (2) Whelen®, Model L31H\*F, LED warning beacons provided at the rear of the truck, located one (1) each side.

The LEDs color of the lights will be red with both domes clear.

There will be a switch located in the cab on the switch panel that controls the beacons when the emergency master and battery switch are on.

The violet wire of each beacon will be connected to the low intensity control. When the low intensity control is activated, the beacons will go into DVI SingleFlash 75 Hi Intensity pattern.

**TRAFFIC DIRECTING LIGHT**

There will be one (1) Whelen®, Model TAL65, 36.00" long x 2.87" high x 2.25" deep, amber LED traffic directing light installed at the rear of the apparatus.

The Whelen, Model TACTL5, control head will be included with this installation.

The controller will be energized when the battery switch is on.

The auxiliary flash not activated.

This traffic directing light will be mounted on top of the body below the turntable with a treadplate box at the rear of the apparatus.

The traffic directing light control head will be located in the driver side overhead switch panel in the right panel position.

**120 VOLT RECEPTACLE**

There will be one (1), 15/20 amp 120 volt AC three (3) wire straight blade duplex receptacle(s) with interior stainless steel wall plate(s), installed behind officer seat. The NEMA configuration for the receptacle(s) will be 5-20R.

The receptacle(s) will be powered from the shoreline inlet.

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There will be a label installed near the receptacle(s) that state the following:

- Line Voltage
- Current Rating (amps)
- Phase
- Frequency

**120 VOLT RECEPTACLE**

There will be one (1), 15/20 amp 120 volt AC three (3) wire straight blade duplex receptacle(s) with an interior stainless steel wall plate, installed upper back wall centered RS1 & LS3. The NEMA configuration for the receptacle(s) will be 5-20R.

The receptacle(s) will be powered from the shoreline inlet.

There will be a label installed near the receptacle(s) that state the following:

- Line Voltage
- Current Rating (amps)
- Phase
- Frequency

**FOUR (4)-SECTION 107 FOOT AERIAL LADDER**

**CONSTRUCTION STANDARDS**

The ladder will be constructed to meet all of the requirements as described in the current NFPA standards.

The aerial device will be a true ladder type device; therefore ladders attached to booms will not be considered.

These capabilities will be established in an unsupported configuration.

All structural load supporting elements of the aerial device that are made of a ductile material will have a design stress of not more than 50% of the minimum yield strength of the material based on the combination of the live load and the dead load. This 2:1 structural safety factor meets the current edition of applicable NFPA standards.

All structural load supporting elements of the aerial device that are made of non-ductile material will have a design stress of not more than 20% of the minimum ultimate strength of the material, based on the combination of the rated capacity and the dead load. This 5:1 safety factor meets the current edition of applicable NFPA standards.

Wire ropes and attaching systems used to extend and retract the fly sections will have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope will remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used will be 1:12. Wire ropes will be constructed of

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seven (7) strands over an inner wire core for increased flexibility. The wire rope will be galvanized to reduce corrosion.

The aerial base pivot bearings will be maintenance free type bearings and require no external lubrication.

The aerial device will be capable of sustaining a static load one and one-half times its rated tip load capacity (live load) in every position in which the aerial device can be placed when the vehicle is on a firm level surface.

The aerial device will be capable of sustaining a static load one and one-third times its rated tip load capacity (live load) in every position the aerial device can be placed when the vehicle is on a slope of five degrees downward in the direction most likely to cause overturning.

With the aerial device out of the cradle and in the fully extended position at zero degrees elevation, a test load will be applied in a horizontal direction normal to the centerline of the ladder. The turntable will not rotate and the ladder will not deflect beyond what the product specification allows.

All welding of aerial components, including the aerial ladder sections, turntable, pedestal, and outriggers, will be in compliance with the American Welding Society standards. All welding personnel will be certified, as qualified under AWS welding codes.

The aerial device will be capable of operating with the maximum rated tip load in either of the two (2) following conditions:

- Conditions of high wind up to 35 mph
- Conditions of icing, up to a coating of 0.25" over the entire aerial structure

All of the design criteria must be supported by the following test data:

- Strain gage testing of the complete aerial device
- Analysis of deflection data taken while the aerial device was under test load

The following standards for materials are to be used in the design of the aerial device:

- Materials are to be certified by the mill that manufactured the material
- Material testing that is performed after the mill test will be for verification only and not with the intent of changing the classification
- All welded structural components for the ladder will be traceable to their mill lots

**LADDER CONSTRUCTION**

The ladder will be comprised of four sections.

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The ladder will have the capability to support a minimum of 750 pounds at the tip in the unsupported configuration, based upon 360 degree rotation, up to full extension and from -10 degrees to +77 degrees.

The ladder (handrails, baserails, trusses, K-braces and rungs) will be constructed of high strength low alloy steel, minimum 100,000 pounds per square inch yield, with full traceability on all structural members.

Each section will be trussed vertically and horizontally using welded steel tubing.

All ladder rungs will be welded to each section utilizing "K" bracing for torsional rigidity.

The inside width dimensions of the ladder will be:

- Base Section 41.87"
- Inner-Mid Section 34.88"
- Outer-Mid Section 27.87"
- Fly Section 21.63"

The height of the handrails above the centerline of the rungs will be:

- Base Section 26.28"
- Inner-Mid Section 22.68"
- Outer-Mid Section 20.06"
- Fly Section 17.32"

The ladder will be designed to provide continuous egress for firefighters and civilians from an elevated position to the ground. The end of the fly section will be constructed in a manner that aids personnel in climbing off the ladder.

The egress section will be designed to maintain the rated load of the aerial device. It will be bolted on for easy replacement. There will be a lift eye welded on to each side of the egress.

**VERTICAL HEIGHT**

The ladder will extend to a minimum height of 107' above the ground at full extension and elevation. The measurement of height will be consistent with NFPA standards.

**HORIZONTAL REACH**

The rated horizontal reach will be a minimum of 100'. The measurement of horizontal reach will be consistent with NFPA standards.

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**TURNTABLE**

The upper turntable assembly will connect the aerial ladder to the turntable bearing. The steel structure will have a mounting position for the aerial elevation cylinders, ladder connecting pins, and upper turntable operator's position.

The turntable will be coated with a non-skid, chemical resistant material in the walking areas. The stepping surfaces will meet the skid-resistance requirements of the current edition of applicable NFPA standards.

The turntable will be modified at the passenger side to allow for easier access to the hose bed for hose loading. The portion of the turntable outboard of the rotational motor will be omitted, and the handrails will be modified as required.

The turntable handrails will be a minimum 42.00" high and will not increase the overall travel height of the vehicle. The handrails will be constructed from aluminum and have a slip resistant knurled surface.

**ELEVATION SYSTEM**

Dual 5.50" diameter elevating cylinders will be mounted on the underside of the base section of the ladder, one (1) on each side. One (1) 2.25" diameter stainless steel pin will fasten each cylinder to the ladder and one (1) 2.50" diameter stainless steel pin will fasten each cylinder to the turntable. The pins will have 125,000 psi minimum yield strength and will be secured with 0.50" Grade 8 bolts with castle nut and cotter pin. The bolts are to ensure that the pins do not walk out of the mounting brackets on the turntable and base section.

The elevating cylinders will be mounted utilizing maintenance-free spherical bearings on both ends of the cylinders. The aerial base pivot bearings will be maintenance-free type bearings with no external lubrication required. The cylinders will function only to elevate the ladder and not as a structural member to stabilize the ladder side movement. The elevating cylinders will be provided with pilot-operated check valves on the barrel and rod side of the piston to prevent movement of the ladder in case of a loss of hydraulic pressure.

The operation envelope will be 10 degrees below horizontal to 77 degrees above horizontal.

The elevation system will be designed following NFPA standards. The elevation hydraulic cylinders will incorporate cushions on the upper limit of travel.

The lift cylinders will be equipped with integral holding valves located in the cylinder to prevent the unit from descending should the charged lines be severed, at any point within the hydraulic system and to maintain the ladder in the bedded position during road travel. The integral holding valves will NOT be located in the transfer tubes.

The elevation system will be controlled by the microprocessor. Linear transducers will measure the extension of the elevation cylinder. The microprocessor will provide the following features:

- Collision avoidance of the elevation system to prevent accidental body damage

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- Automatic deceleration when the aerial device is lowered into the cradle
- Automatic deceleration at the end of stroke, in maximum raise and lower positions
- Deceleration of the aerial device at the limits of travel.

**EXTENSION/RETRACTION SYSTEM**

A hydraulically powered, extension and retraction system will be provided through dual hydraulic cylinders and wire ropes. Each set will be capable of operating the ladder in the event of a failure, of the other. The extension cylinder rod will be chrome plated to provide smooth operation of the aerial device and reduce seal wear. The extension/retraction cylinders will be equipped, with integral holding valves, to prevent the unit from retracting should the charged line be severed, at any point within the hydraulic system. The integral holding valves will NOT be located in the transfer tubes.

Wire ropes and attaching systems used to extend and retract the fly sections will have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope will remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used will be 1:12. Wire ropes will be constructed of seven (7) strands over an inner wire for increased flexibility. The wire rope will be galvanized to reduce corrosion.

The extension/retraction system will be controlled by the microprocessor. Linear transducers will measure the ladder extension. The microprocessor will provide the following features:

- Automatic deceleration at the end of stroke, in maximum extend and retract positions

All sheaves will require lubrication. They will have bronze bushings and grease zerks.

**MANUAL OVERRIDE CONTROLS**

Manual override controls will be provided for all aerial and stabilizer functions.

**LADDER SLIDE MECHANISM**

UHMW polyethylene wear pads will be used between the telescoping ladder sections, to provide greater bearing surface area for load transfer. Adjustable slide pads will be used to control side play between the ladder sections.

**ROTATION SYSTEM**

The aerial will be supplied with a powered rotation system as outlined in NFPA standards. The hydraulic rotation motor will provide continuous rotation under all rated conditions and be supplied with a brake to prevent unintentional rotation. One (1) hydraulically driven, planetary gear box with drive speed reducers will be used to provide infinite and minute rotation control throughout the entire rotational travel. One (1) spring applied, hydraulically released disc type swing brake will be furnished to provide positive braking of the turntable assembly. Provisions will be made for emergency operation of the rotation system should complete loss of normal hydraulic power occur. The hydraulic system will be equipped with pressure relief valves which will limit the rotational torque to a nondestructive power. The gearbox will have a minimum continuous torque rating of 80,000 in. lbs. and a minimum

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intermittent rating of 160,000 in. lbs. The turntable bearing, ring gear teeth, pinion gear, planetary gearbox, and output shaft will be certified by the manufacturer of the components for the application.

The rotation system will be controlled by the microprocessor. The microprocessor will provide the following features:

- Collision avoidance to prevent accidental body damage
- Prevent the aerial from being rotated into an unstable condition.

**ROTATION INTERLOCK**

The microprocessor will be used to prevent the rotation of the aerial device to the side in which the stabilizers have not been fully deployed (short-jacked). The microprocessor will allow full and unrestricted use of the aerial, in the 180 degree area, on the side(s) where the stabilizers have been fully deployed. The system will also have a manual override, to comply with NFPA. SYSTEMS THAT PERMIT THE AERIAL TO ROTATE TO THE "SHORT JACK" SIDE, WITHOUT AUTOMATICALLY STOPPING THE ROTATION AND/OR WITHOUT ACTUATION OF THE "MANUAL OVERRIDE", will NOT BE ACCEPTED. SYSTEMS THAT ONLY INCLUDE AN ALARM ARE NOT CONSIDERED AN INTERLOCK AND will NOT BE ACCEPTED.

**LADDER CRADLE INTERLOCK SYSTEM**

A ladder cradle interlock system will be provided through the microprocessor to prevent the lifting of the aerial device from the nested position until the operator places all the stabilizers in a load supporting configuration. A switch will be installed at the boom support to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

**AERIAL TORQUE BOX/PEDESTAL**

The pedestal assembly will be a welded assembly made of high strength 0.25" plate. The vertical member will be a 0.375" reinforced wall cylinder with a 28.00" outside diameter and will connect the rotation bearing mounting plate to the lower substructure.

The pedestal assembly will be bolted to the chassis frame with 0.88" diameter Grade 8 bolts, and will be utilized to mount the outrigger jacks and reservoir for the aerial hydraulic system.

**LOAD CAPACITIES**

The following load capacities will be established, with the stabilizers at full horizontal extension and placed in the down position, to level the truck and to relieve the weight from the tires and axles.

Capacities will be based upon full 360 degree rotation with ladder extended to operational limits at 0 degrees elevation.

A load chart, visible at the operator's station will be provided. The load chart will show the recommended safe load at any condition of the aerial device's elevation and extension.

**35 MPH WIND CONDITIONS/WATERWAY DRY**

Degrees of	-10 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 77
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Elevation								
Egress	750	750	750	750	750	750	750	750
Fly	-	-	-	-	250	250	500	750
Upper Mid	-	-	-	-	250	500	1000	1000
Lower Mid	-	-	-	500	500	750	1000	1000
Base	-	-	500	500	500	1000	1000	1000

**35 MPH WIND CONDITIONS/WATERWAY CHARGED**

Degrees of Elevation	-10 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 77
Egress	500	500	500	500	500	500	500	500
Fly	-	-	-	-	-	250	500	500
Upper Mid	-	-	-	250	500	500	750	1000
Lower Mid	-	-	-	250	500	750	1000	1000
Base	-	-	250	500	750	1000	1000	1000

**Reduced loads at the tip can be redistributed in 250 lb. increments to the fly, mid, or base sections as needed.**

**The tip capacity will be reduced to zero when flowing water with the nozzle above the waterway centerline.**

**BOOM SUPPORT**

A heavy duty boom support will be provided for support of the ladder in the travel position. On the base section of the ladder, a stainless steel scuffplate will be provided where the ladder comes into contact with the boom support.

The boom support will be located just to the rear of the chassis cab.

**AERIAL BOOM SUPPORT LIGHT**

There will be one (1) Amdor®, Model AY-LB-12HW012, 190 lumen, 12" long, white LED strip light mounted on the boom support cradle. This light will be activated when the aerial master switch is activated.

**FUTURE BOOM SUPPORT COMPARTMENT PROVISION**

There will be 0.50" of wheelbase added to allow for a boom support compartment to be added at a future time.

**AERIAL BOOM PANEL**

There will be one boom panel provided on the base section on the left side of the aerial device while viewed from the turntable. This boom panel will be sized to match the storage box on the opposite side. The boom panel will be painted #90 red.

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The boom panel will be designed so no mounting bolts are in the face of the panel. This will keep the lettering surface free of holes.

**FOLDING STEPS**

One (1) set of folding steps will be provided at the tip of the ladder. An additional set of folding steps will be provided at the base of the fly section. The steps will be bright finished with a black tread coating on the stepping surface. Each step will have no integrated light.

**AERIAL DEVICE RUNG COVERS**

Each rung will be covered with a secure, heavy-duty, fiberglass pultrusion that incorporates an aggressive, no-slip coating.

The rung covers will be glued to each rung and will be easily replaceable should the rung cover become damaged.

The center portion of each rung cover will be black and the outside 2.00" edge at each side will be safety yellow.

Under no circumstances will the rung covers be fastened to the rungs using screws or rivets.

The rung covers will have a 10-year, limited warranty.

**LADDER STORAGE MOUNTING BRACKETS**

Mounting will be provided on the left side of the aerial device while viewed from the turntable for storage of one (1) roof ladder(s). The bracket(s) will be located inboard of the boom panel at the base section. The bracket(s) will hold the boom panel as close to the base section as possible and include straps to secure the ladder.

The mounting brackets will accommodate a 14' Duo-Safety 875-DR roof ladder as determined by the type of aerial device and the available space.

**STABILITY TEST**

An aerial stability test will be run on the apparatus using the maximum weight allowance for tip options.

**STOKES AND BACKBOARD STORAGE BOX**

There will be one (1) aluminum storage box(es) provided at the base section of the aerial ladder on the right side of the aerial device while viewed from the turntable. The box will be painted to match the aerial device with the face of the box painted to match the boom sign color. The box(es) will be located in place of the aerial boom panel and have a hinged cover with pair of rubber draw latches to secure the equipment. The cover will have the same finish as the box. The cover will be tied in to the open door indicator circuitry when in the open position. A divider will be provided to separate the stokes basket and the backboard. The box(es) will have no louvers.

The size of the stokes basket will be 86.00" long x 24.00" wide x 8.00" high. The size of the backboard will be 72.00" long x 18.00" wide x 2.00" high.

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The maximum capacity of each box will be 75 lb.

**LIGHTS FOR TURNTABLE WALKWAY**

There will be white LED lights provided at the aerial turntable. The lights will be located to illuminate the entire walking surface of the turntable including the area around the turntable console. These lights will be activated by the aerial master switch.

**TURNTABLE CONSOLE LIGHTING**

There will be one (1) TecNiq, Model T10, white LED light strip mounted in the turntable console cover to illuminate the controls located on both the upper and lower portion of the turntable control station. These lights will be activated by the aerial master switch.

**INFORMATION CENTER**

There will be an information center provided. The information center will operate in temperatures from -40 to 158 degrees Fahrenheit. The information center will employ a Linux operating system and a 7.00" (diagonal measurement) LCD display. The LCD will have a minimum 1000nits rated, color display. The LCD will be sunlight readable, true digital operation, and will have improved resolution. The LCD display will be encased in an ABS, grey plastic housing. There will be five (5), weather-resistant user interface switches provided. The LCD display can be changed to an available foreign language.

**Operation**

The information center will be designed for easy operation in everyday use. There will be a page button to cycle from one screen to the next screen in a rotating fashion. A video button will allow an NTSC signal into the information center to be displayed on the LCD. If any button is pressed while viewing a video feed, the information center will return to the vehicle information screens. There will be a menu button to provide access to maintenance, setup, and diagnostic screens. All other button labels will be specific to the information being viewed.

**General Screen Design**

Where possible, background colors will be used to provide vehicle information *At A Glance*. If the information provided on a screen is within acceptable limits, a black background color will be used. If the information provided on a screen is not within acceptable limits, an amber background color will indicate a caution condition and a red background color will indicate a warning condition.

Every screen in the information center will include the time (12- or 24-hour mode) and a fault alert triangle symbol. The time will be synchronized between all Command Zone color displays located on the vehicle. Once the fault alert triangle is selected, a text message will identify any items causing the audible alarm to sound. If more than one (1) audible alarm is activated, the text message for each alarm will cycle every second until the problems have been resolved. The background for the Alert Center will change to indicate the severity of the warning message. Amber will indicate a caution condition and red will indicate a warning condition. If a warning and a caution condition occur simultaneously, the red background color will be shown for all Alert Center messages.

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A label or symbol will be provided for each button. The label or symbol will indicate the function for each active button for each screen. If the button is not utilized on specific screens, it will remain black.

Symbols will accurately depict the aerial device type the information pertains to such as rear mount ladder, rear mount platform, mid-mount ladder or mid-mount platform.

**Page Screens**

The Information center will include the following pages:

The Aerial Main and Load Chart page will indicate the following information:

Rungs Aligned and Rungs Not Aligned will be indicated with respective green or red colored ladder symbols.

Ladder Elevation will be indicated via a fire apparatus vehicle with ladder symbol with the degree of elevation indicated between the vehicle and ladder.

Water Flow (if applicable) will be indicated via a water nozzle symbol and text indicating flow / time.

If applicable, breathing air levels will be indicated via an air bottle symbol and text indicating the percent (%) of air remaining. A green bar graph shown inside the bottle will indicate oxygen levels above 20 percent. A red bar graph will indicate oxygen levels at or below 20 percent. When oxygen levels are at or below 10 percent, the red bar graph will flash.

*At A Glance* color features will be utilized on this screen. A fault alert triangle symbol in the lower right portion of the screen will indicate any caution faults with a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

The Aerial Reach and Hydraulic Systems page will indicate the following information:

If applicable, aerial hydraulic oil temperature will be indicated with symbol and text.

Aerial Hydraulic Oil Pressure will be indicated with a symbol and text.

The following calculations will be indicated on a representative vehicle symbol:

Aerial Device Extension length

Aerial Device Height indicating the height of the aerial device tip from the ground

Aerial Device Angle indicating the angle from the vehicle which the device is at.

*At A Glance* color features will be utilized on this screen. A fault alert triangle symbol in the lower right portion of the screen will indicate any caution faults with a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

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The Level Vehicle page will indicate the following information:

The grade of the vehicle will be indicated via a fire apparatus vehicle symbol with the degree of grade shown in text format. The symbol will tilt dependent on the vehicle grade.

The slope of the vehicle will be indicated via a fire apparatus vehicle symbol with the degree of slope shown in text format. The symbol will tilt dependent on the vehicle slope.

Outriggers status will be indicated via a colored symbol for each outrigger present. Each outrigger status will be defined as one of the following:

Outrigger stowed indicated with a silver pan located close to the vehicle

Outrigger fully extended indicated with a fully deployed green outrigger

Outrigger short-jacked indicated by a yellow outrigger partially deployed

Outrigger not set indicated by a red outrigger that is not set on the ground

A bedding assist alert will indicate that the aerial device is being aligned by the Command Zone system as the operator lowers the aerial device into the cradle with the joystick.

*At A Glance* color features will be utilized on this screen. A fault alert triangle symbol in the lower right portion of the screen will indicate any caution faults with a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

The aerial operation envelope page will indicate the following:

- A top view of the aerial operating envelope
- A side view of the aerial operating envelope

### **Menu Screens**

The following screens will be available through the Menu button:

- The View System Information screen will display aerial device hours, aerial PTO hours, ladder aligned for stowing, aerial rotation angle, total water flow (if applicable), and aerial waterway valve status (if applicable).
- The Set Display Brightness screen will allow brightness increase and decrease and include a default setting button.
- The Configure Video Mode screen will allow setting of video contrast, video color and video tint.
- The Set Startup screen allows setting of the screen that will be active at vehicle power-up.
- The Set Date and Time screen has a 12- or 24-hour format, and allows setting of the time and date.
- The View Active Alarms screen shows a list of all active alarms including the date and time of each alarm occurrence, and shows all alarms that are silenced.

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- The System Diagnostics screen allows the user to view system status for each module and its respective inputs and outputs. Viewable data will include the module type and ID number; the module version; and module diagnostics information including input or output number, the circuit number connected to that input or output, the circuit name (item connected to the circuit), status of the input or output, and other module diagnostic information.
- Aerial Calibrations screen indicates items that may be calibrated by the user and instructions to follow for proper calibration of the aerial device.

Button functions and button labels may change with each screen.

### **Lower Stabilizer Control Stations**

A lower control station will be located on each side of the rear wall of the apparatus in an easily accessible area. The controls and indication labels will be illuminated for nighttime operation. The following items will be furnished at the lower control station and will be clearly identified and conveniently located for ease of operation and viewing:

- Level assist switch
- Override switch to override interlocks
- Emergency stop
- Emergency hydraulic power unit switch

The stabilizer controls will include the following:

- Leveling assist toggle switch
- Left and right side stabilizer beam in/out switches
- Left and right side stabilizer beam up/down switches
- Rear stabilizer up/down switch

### **Turntable Control Station**

There will be one (1) device control station located on the left side of the turntable so the operator may easily observe the ladder while operating the controls. All elevation, extension and rotation controls will operate from this location. The controls will permit the operator to regulate the speed of the aerial functions, within the safe limits, as determined by the manufacturer and NFPA standards. Each control will be equipped with a positive lock to hold the control in a neutral position preventing accidental activation. In addition to the neutral lock, a console cover will be provided at the turntable control station. The controls will be so designed to allow the turntable control station to immediately override the tip controls, if equipped, even if the ladder is being operated by the tip controls.

The following items will also be provided at the turntable control station, clearly identified and illuminated for nighttime operation and conveniently located for ease of operation and viewing:

- Intercom controls
- Tip tracking light switch
- Emergency stop switch

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- Emergency power unit switch
- Operator's load chart
- Two (2) position switch for selecting aerial operational speed
- Ladder illumination switch (if equipped)
- Aerial monitor switches (if equipped)

**High Idle**

The high idle will be controlled by the microprocessor. The microprocessor will automatically adjust the engine rpm, to compensate for the amount of load placed upon the system. The system will include a safety device that allows activation of the high idle, only when the parking brake is set and the transmission is placed in neutral.

**STABILIZERS**

The vehicle will come equipped with an out and down stabilization system. The system will consist of two (2) hydraulically operated out and down style stabilizers mounted above the frame and a rear stabilizer jack that is attached directly to the center rear of the torque box.



The stabilizers will have a maximum spread of 18' from the centerline of the footpads when fully extended. The internal tubes will be 8.00" x 10.00" with 1/2" thick top and bottom plates and 3/8" thick sides of 130,000 psi minimum yield strength steel and will be extended out by hydraulic cylinders. The cylinders will have pilot-operated check valves with thermal relief. This will insure that the beams will be in the stowed during travel. The external tubes will be 9-3/4" x 11-3/4" with 3/8" wall thickness. The internal jack tubes will slide on permanently attached wear pads.

The extension cylinders will be totally enclosed within the extension beams. The horizontal extension cylinders will be of the trombone type to eliminate wear and potential failure of hydraulic hoses.

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The stabilizers will have a tip over safety margin of 1 1/2 times its rated load in any position the aerial device can be placed as outlined in the current edition of NFPA. The aerial will be able to sustain a 1 1/3 to 1 rated load on a 5 degree slope downward in the position most likely to cause overturning. The maximum ground slope the apparatus can be set up on is 12 percent. On the 12 percent slope, the apparatus can be leveled within a 6 percent operating range with the apparatus cab facing uphill.

The cylinders will be supplied with dual pilot operated check valves on each stabilizer cylinder to hold the cylinder in the stowed or working position should a charged line be severed at any point in the hydraulic system. Stabilizers will contain safety lock valves and will require no mechanical pins to assure there will be no "leak down" of stabilizer legs.

Each stabilizer leg will have attached to the end of the leg a pan that will be a maximum 13.00" wide to allow the extension of the stabilizer between parked cars. This pan will serve as a protective guard and a mounting surface for warning lights. The top, forward, and rear edges will be flanged back for added strength.

The stabilizer cylinders will be sized to maximize ground penetration. The lift cylinders will be mounted on the end of the stabilizer tube and will have the following dimensions:

4.00" bore

3.50" rod

23.38" stroke

The stabilizer extension cylinders will have the following dimensions

1.75" bore

1.25" rod

64.00" stroke

The rear stabilizer will have the following dimensions:

4.50" bore

4.00" rod

29.00" stroke

Each stabilizer that can be extended from the body will be supplied with a red warning light as outlined in the current edition of NFPA. The stabilizers will be connected to a warning light in the cab to warn the operator if the stabilizers are deployed.

The ground contact area for each stabilizer will be a 12.00" diameter circular stainless steel disc without the auxiliary pads and 24.00" x 24.00" with lightweight composite material pads deployed. The ground pressure will not exceed 75 psi when the apparatus is fully loaded and the aerial device is carrying its

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rated capacity in every position. This will be accomplished with the stabilizer pads deployed, as outlined in the current edition of NFPA. There will be one (1) pad located on each side of the apparatus in front of the stabilizers.

The auxiliary jack pad for the rear stabilizer will be integral to the stabilizer foot pad.

**STABILIZER CONTROLS**

One (1) electric solenoid valve will control the stabilizers. The control switches will be located one (1) each side at the rear of the apparatus so the operator may observe the stabilizers during deployment.

The stabilizer controls will include the following:

- Leveling assist toggle switch: The outrigger control system will incorporate a computerized self leveling system in addition to the standard outrigger controls. The operator will have the option to manually or automatically level the truck. The computerized system will ensure full outrigger extension, proper jack penetration, and will level the vehicle within 1/2 a degree of level for safe operation of the aerial device.
- One (1) electric toggle switch for the engaging the emergency power unit.
- Two (2) fully extended beams green indicator lights: these lights will be illuminated when each of the respective stabilizer beams are fully extended.
- Three (3) firm on ground green indicator lights: each light will be illuminated when its respective stabilizer shoe is in the load supporting condition.

Each toggle switch will activate the engine fast idle automatically.

Manual override will be supplied for each stabilizer control valve.

A stabilizer deployment audible warning alarm will be provided and activated by the stabilizer movement.

A "Stabilizers Not Stowed" indicator will be provided in the driver's compartment. It will illuminate automatically whenever the stabilizers are not fully stowed to prevent damage to the apparatus if moved. The stabilizer system will also be wired to the "Do Not Move Indicator Light", which will flash whenever the apparatus parking brake is not fully engaged and the stabilizers are not fully stowed.

**STABILIZER PAN MATERIAL**

The aerial stabilizer pans will be stainless steel, painted to match the lower body color.

**STABILIZER CONTROL BOX DOORS**

A vertically hinged smooth aluminum door will be provided over each stabilizer control box. The door will be hinged along the outboard edge and be provided with a Southco C2 chrome raised trigger lever latch.

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**STABILIZER PLACEMENT**

There will be two (2) cameras provided and installed on the body, one (1) directly above each stabilizer. The cameras will be activated with a switch in the cab and will provide a picture to specify the fully extended stabilizer position allowing the driver the ability to position the vehicle with the proper clearance for stabilizer deployment.

**HYDRAULIC SYSTEM**

All hose assemblies will be assembled and crimped by the hose manufacturers certified technician.

All manufacturing employees responsible for the installation of hydraulic components will be properly trained. Training will include: proper handling, installation, torque requirements, cleanliness and quality control procedures for hydraulic components.

Hoses used in the aerial hydraulic system will be of a premium quality hose with a high abrasion resistant cover. All pressure hoses will have a working pressure of 4000 psi and a burst pressure rating of 16,000 psi.

All hydraulic fittings and tubing will be plated to minimize corrosion.

The fitting will use an O-ring seal where possible to minimize hydraulic leaks.

An interlock will be provided that prevents activation of the hydraulic pump until the transmission is placed in neutral and the parking brake is set as outlined in the current NFPA standard.

The system will meet the performance requirement of the current NFPA standard, which requires adequate cooling less than 2.5 hours of operations.

All hydraulic components that are non-sealing whose failure could result in the movement of the aerial will comply with current NFPA standards and have burst strength of 4:1.

Dynamic sealing components whose failure could cause aerial movement will have a margin of 2:1 on maximum operating pressure per the current NFPA standard.

All hydraulic hoses, tubes, and connections will have a minimum burst strength of 4:1 per the current NFPA standard.

A hydraulic oil sight gauge will be supplied at the rear of the unit for easy fluid level verification.

A chassis mounted positive displacement piston pump for consistent pressure and rapid responses will supply hydraulic power for all aerial operations. The positive displacement pump will provide 3,150psi. The hydraulic pump will be solely dedicated to aerial operations.

Each aerial will be evaluated as to the region and climate where it will be used to determine the optimum viscosity and proper oil grade. Oil viscosity will be based on an optimum range of 80 to 1000 SUS during normal aerial use. Before shipment of the unit, an oil sample will be taken and analyzed to confirm the oil is within the allowable ISO grade tolerance.

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The aerial hydraulic system will have a minimum oil cleanliness level of ISO 18/15/13 based on the ISO 4406:1999 cleanliness standard. Each customer will receive a certificate of actual cleanliness test results and an explanation of the rating system.

Each aerial will include an oil sample port, identified with a yellow dust cap and a label, for subsequent customer testing.

Ball valves will be provided in the hydraulic suction lines to permit component servicing without draining the oil reservoir.

The aerial will incorporate the use of trombone steel tubes inside the stabilizer beams to eliminate hydraulic hose wear and leaks.

Hydraulic power to the ladder will be transferred from the pedestal by a hydraulic swivel.

The system hydraulic pressure will be displayed on the turntable display.

The hydraulic system will be additionally protected from excessive pressure by a secondary pressure relief valve set at 3,150 psi. In the event the main hydraulic pump compensator malfunctions, the secondary relief will prevent system damage.

#### **HYDRAULIC CYLINDERS**

All cylinders used on the aerial device will be produced by a manufacturer that specializes in the manufacture of hydraulic cylinders.

Each cylinder will include integral safety holding cartridges.

Each cylinder will be designed to a minimum safety factor of 4:1 to failure.

All safety holding cartridges will be installed at the cylinder manufacturer, in a controlled clean environment to avoid possible contamination and or failure.

#### **POWER TAKEOFF/HYDRAULIC PUMP**

The apparatus will be equipped with a power takeoff driven by the chassis transmission and actuated by an electric shift, located inside the cab. The power takeoff which drives the hydraulic pump will meet all the requirements for the aerial unit operations.

A green indicator light will be installed on the cab instrument panel to notify the operator that the power takeoff is engaged.

An interlock will be provided that allows operation of aerial power only after the chassis spring brake has been set and the chassis transmission has either been placed in the neutral position or drive position after the driveline has been disengaged from the rear axle.

The hydraulic system will be supplied by a variable displacement load and pressure compensating piston pump. The pump will meet the demands of all three simultaneous aerial functions. The pump

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will provide proper flow for single aerial function with the engine at idle speed. A switch will be provided on the control console to increase the engine speed for multiple function operation.

**EMERGENCY PUMP**

The hydraulic system will be designed with an auxiliary power unit meeting the guidelines of the current NFPA standard.

The aerial will be equipped with an emergency hydraulic pump, electrically driven from the truck batteries. The pump will be capable of running for 30 minutes for limited aerial functions to stow the unit in case of a main pump or truck system failure. A momentary switch will be located at the stabilizer and aerial control locations to activate the emergency pump.

**AERIAL CONTROL VALVE**

The aerial hydraulic control valve will be designed with special spool flows, limiting the oil flow for the designed function speed. The valve will be electrically controlled and be located in the control console with the handles oriented downward for manual operation. The activation handles will be spaced a minimum of 3.50" for ease of operation. The valve spools will be designed to bleed off downstream pressure, in the neutral position and allow proper sealing of any cylinder holding cartridge.

**OIL RESERVOIR**

The oil reservoir will have a minimum capacity of 20 gallons. The oil fill location will be easily accessible and be labeled "Hydraulic Oil Only" and also indicate the grade of oil that is installed in the reservoir. The fill will have a desiccant breather filter with a water capacity of 4 fluid ounces and a 5 micron rating.

Two suction ports will be provided, one for the main hydraulic pump and one for the emergency pump. The main suction will be slightly elevated off the bottom of the reservoir. The emergency suction port will be closer to the bottom of the reservoir to provide some reserve oil for emergency operation.

A temperature sending unit in the reservoir will provide indication of the oil temperature on an electronic display.

The hydraulic oil reservoir will be labeled per the current edition of NFPA standard.

**RETURN FILTER**

The low pressure oil filter will be integrated with the hydraulic manifold and designed to prevent oil loss during filter change. The system will incorporate the following filter to provide dependable service:

- return filter: beta 200 at 6 micron

**HYDRAULIC SWIVEL**

The aerial ladder will be equipped with a six (6) port, high pressure hydraulic swivel which will connect the hydraulic lines from the hydraulic pump and reservoir through the rotation point to the aerial control bank. The hydraulic swivel will allow for 360 degree continuous rotation of the aerial.

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**ELECTRIC SWIVEL**

The ladder will be equipped with an electric swivel to allow 360 degrees rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of 28 collector rings will be provided that are capable of supplying 20 amp continuous service. All collector rings will be enclosed and protected with desiccant plugs against condensation and corrosion. No oil or silicone will be used.

**WATER SWIVEL**

Water will be transferred to the aerial waterway by means of a 5.00" internal diameter waterway through the swivel, permitting 360 degree continuous rotation.

**13-BIT ABSOLUTE ENCODER**

The aerial ladder will be equipped with a 13-Bit Absolute Encoder, CAN-based, which provides 8192 counts per shaft turn for position and direction reference.

The 13-Bit Absolute Encoder will provide a unique binary word to reference each position and direction for all 360 degrees of rotation.

If the power is interrupted for any reason, the 13-Bit Absolute Encoder will allow power to be returned to the system without having to re-zero the settings.

The 13-Bit Absolute Encoder will be an integral part of a micro-processor based control system.

**ELECTRICAL SYSTEM**

The standard 8 conductor cable to the tip contains 10 AWG conductors.

The aerial device will utilize a microprocessor-based control system. The system will consist of the following components:

Control System Modules

Each of the control system modules will be configured as follows:

Sealed to a NEMA 4X rating

Operating range from -40 degrees F to 156 degrees F (-40 degrees C to 70 degrees C)

Communicate using J1939 data link

Two (2) diagnostic LED lights

One (1) green light that illuminates when module has power (B+) and ground

One (1) red light that flashes to indicate the module is capable of communicating via the data link

Up to 16 diagnostic LEDs on each module

Ground matrix identification system

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The following control system modules will be used:

Control Module

Main controller for the system

USB connection allows for computer diagnostics

Power Module

Built-in fault sensing

Eight (8) digital outputs

Pulse width modulating (PWM) capable

10A continuous per output

Circuit protection based on actual current draw (not affected by heat)

Current Control Module

Built-in fault sensing

Three (3) analog inputs

Eight (8) digital outputs

Pulse width modulating (PWM) capable

3A continuous per output

Closed Loop System

Circuit protection based on actual current draw (not affected by heat)

Input Module

16 software selectable (digital or analog) inputs

Output Module

16 digital outputs

Input/Output Module

Eight (8) software selectable (digital or analog) inputs

Eight (8) digital outputs

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**TIP LIGHT**

There will be two (2) Whelen® Model MP\*\*, 5,695 lumens 12 volt DC LED lights installed at the tip of the aerial device.

One (1) will be located on the left side with left side tip light to include spot optics.

One (1) will be located on the right side with right side tip light to include spot optics.

- The light(s) to be installed on adjustable bail bracket(s).
- The painted parts of this light assembly to be black

The lights will be controlled with the tracking lights.

**TRACKING LIGHTS**

There will be two (2) Whelen® MP\*\*, 5,695 lumens 12 volt DC LED lights installed on the base section of the aerial device below the hand rails per the following:

- One (1) will be located on the left side with left side tracking light to include spot optics.
- One (1) will be located on the right side with right side tracking light to include spot optics.
- The light(s) to be installed on adjustable bail bracket(s).
- The painted parts of this light assembly to be black.

The tracking lights will be controlled by a switch located at the platform/tip and turntable.

**LIGHTING ON AERIAL LADDER**

There will be TecNiq, Model D02 LED rung lighting provided on both sides of the aerial ladder base, lower and upper mid, and fly sections. The lighting will be located adjacent to the ladder rungs along the lower rail of the ladder sections and will run the length of the ladder section.

The color of the sections will be:

- The base section of the ladder to be red.
- The lower mid section of the ladder to be red.
- The upper mid section of the ladder to be red.
- The fly section of the ladder, excluding the egress, to be red.

The LED rung lighting will be activated when a switch at the turntable operator's panel is activated through the master battery switch.

The lights may be load managed when the parking brake is applied.

**STABILIZER WARNING LIGHTS**

There will be two (2) Whelen®, Model M6\*\*, 4.31" high x 6.75" wide x 1.37" deep flashing LED warning lights with chrome trim installed per the following:

- The left side rear stabilizer pan warning light to include red LEDs.

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- The right side rear stabilizer pan warning light to include red LEDs.

The lens color(s) to be clear.

The lights will be activated by the same switch as the side warning lights or the aerial master switch.

Each light will have the low intensity mode wire connected to the controlling circuit.

### **STABILIZER BEAM WARNING LIGHTS**

There will be two (2) Whelen®, Model T0R00FRR, 2.00" round red LED flashing lights mounted on each out and down stabilizer, one (1) facing forward and one (1) facing rearward.

The lights will be recessed in the horizontal beam of the stabilizer.

These warning lights will be activated with the aerial master switch.

### **STABILIZER SCENE LIGHTS**

There will be three (3) Amdor, Model AY-LB-12HW012, 190 lumens, 12.00" long, white LED strip lights installed to illuminate the area around the aerial stabilizers, one (1) light per stabilizer. The lights will be activated by the aerial master switch.

### **COMMUNICATION SYSTEM**

An Atkinson communication system will be furnished between the aerial tip and the turntable operator's position. The communication system will be a two (2)-way system with the communication speaker at the tip requiring no operator attention to transmit or receive. The transmitting and receiving volume controls will be located at the turntable operator's position.

### **AERIAL PEDESTAL**

The aerial pedestal will accommodate the height of the cab.

### **LIFTING EYE ASSEMBLY - ROPE RESCUE ATTACHMENT**

A lifting eye assembly will be provided that is designed to evenly distribute load at the tip of the aerial. The lift eye assembly is retained by two (2) locking pins, one (1) at each end outboard side of the egress. Leveling is maintained by the lifting eye assembly rotating within the egress mounting. The lifting eye assembly rating will match the capacity rating of the aerial device.

### **AERIAL TURNTABLE MANSAYER™ BARS**

Yellow ManSaver™ bars will be installed at the aerial turntable.

### **WATER SYSTEM**

A waterway system will be provided consisting of the following components and features:

A 5.00" pipe will be connected to the water supply on one end and to a 5.00" internal diameter water swivel at the rotation point of the turntable. The water swivel will permit 360 degree continuous rotation of the aerial device.

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The 5.00" waterway swivel is to be routed through the rotation point up to the heel pin swivel. The heel pin swivel will allow the water to flow to the ladder pipe while elevating the aerial ladder from -10 degrees to 77 degrees. The heel pivot pin is not integral with the waterway swivel at any point. The design of the waterway will allow complete servicing of the waterway swivel without disturbing the heel pivot pin.

The integral telescopic water system will consist of a 4.50" diameter tube in the base section, a 4.00" diameter tube in the inner mid-section, a 3.50" diameter tube in the outer mid-section, and a 3.00" diameter tube in the fly section. The telescopic waterway will be constructed of anodized aluminum pipe.

The aerial will be capable of discharging up to 1000 gpm at 100 psi parallel to the ladder and 90 degrees to each side of center while maintaining the rated tip load.

The aerial will be capable of discharging between 1001 and up to 1500 gallons per minute at 100 psi parallel to the ladder and 40 degrees to each side of center while maintaining the rated tip load.

The master stream will be capable of flow up to 30 degrees above horizontal.

An adjustable pressure relief valve will be furnished to protect the aerial waterway from a pressure surge.

A 1.50" drain valve will be located at the lowest point of the waterway system.



### **WATERWAY SEALS**

The waterway seals will be of type-B PolyPak design, composed of nitroxile seal and a nitrile wiper, which together offer maximum stability and extrusion resistance on the waterway. The seal will be capable of withstanding pressures up to 2000 psi, temperatures in excess of 250 degrees Fahrenheit and have resistance to all foam generating solutions. The seals will be internally lubricated.

The waterway seals will have automatic centering guides constructed of synthetic thermalpolymer. The guides will provide positive centering of the extendible sections within each other and the base section to insure longer service life and smoother operation.

### **AERIAL MONITOR**

An Akron Model 3486 monitor with stow and deploy will be provided at the tip with a Akron 1500 gpm Model 5178. This monitor will allow for an additional 30 degrees of travel above horizontal at the aerial tip.

The monitor's functions will be controlled electrically from two (2) separate locations. One (1) control will be located at the control console and the other at the ladder tip.

There will be a courtesy light at the tip of the aerial to illuminate the controls.

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If the aerial has a quick-lock waterway, a limit switch will be provided to disable the extended vertical travel when the monitor is locked to the lower ladder section.

**AERIAL VALVE MANIFOLD UNDER MONITOR**

An Akron Aerial Valve Manifold (AVM) valve and manifold will be provided at the aerial waterway monitor inlet. This configuration provides a valve to control flow through the monitor and an additional valve as a discharge connection for hose.

The AVM monitor flow control valve will be manually operated at the tip of the ladder with a slow close gear valve. The valve will have an integral automatic drain valve.

The Akron S2 left side discharge valve will have a 90 degree, 1/4 turn ball valve with 2.50" NH outlet threads. A 2.50" NH cap with chain will be provided.

A pressure relief valve will be installed to prevent incidental damage to the waterway system when both valves are closed.

**AERIAL WATERWAY FLOW METER**

Waterway flow, including total water flowed, will be monitored by the microprocessor. An LCD display will be located at the turntable control station.

**REAR INLET**

A 5.00" NST inlet to the aerial waterway will be provided at the rear of the apparatus. The inlet will have 5.00" aluminum plumbing. It will be furnished with a 5.00" chrome plated adapter and a 5.00" chrome plated, long handle cap.

**WATERWAY LOCKING SYSTEM**

The aerial ladder waterway monitor will be capable of being positioned at either the fly section or at the next lower section of the ladder.

The monitor location will be changeable by the use of a single handle, located at the side of the ladder.

The handle, attached to a cam bracket, will simply be moved forward to lock the monitor at the fly section and back to lock it to the previous section.

There will be no pins to remove and reinstall.

The monitor will be operational at all times, regardless of its position, without connecting or disconnecting electrical lines.

**TOOLS**

The following tools will be provided for retorquing of all specified bolts as recommended by the manufacturer:

- Torque Wrench
- All Required Extensions, Sockets and Adapters
- 4-to-1 Multiplier

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**MANUALS**

Two (2) operator maintenance manuals and two (2) wiring diagrams pertaining to the aerial device will be provided with the apparatus at time of pick-up. Manuals will be in the English language.

**INITIAL INSTRUCTION**

On initial delivery of the fire apparatus, the contractor will supply a qualified representative to demonstrate the apparatus and provide initial instruction to the fire department regarding the operation, care, and maintenance of the apparatus for a period of three (3) consecutive days.

**LOOSE EQUIPMENT**

The following equipment will be furnished with the completed unit:

- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit.

One (1) set of reflective emergency triangles will be provided.

**NFPA LOOSE EQUIPMENT**

**NFPA Required Loose Equipment Provided by Fire Department**

The following loose equipment as outlined in NFPA 1900, 2024 edition, table 8.1 and CAN/ULC S515:2024 edition, section 5.2 will be provided by the fire department:

- One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 107, *American National Standard for High-Visibility Safety Apparel and Accessories*, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front.
- Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band.
- Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.
- Four (4) ladder belts meeting the requirements of NFPA 2500.

**NFPA Loose Equipment That Should be Considered**

The following loose equipment as outlined in NFPA 1900, 2024 edition, appendix table A.8.4 (a) and CAN/ULC S515:2024 edition, section 5.2 should be considered:

- 800 ft (240 m) of 2.50" (65 mm) or larger fire hose
- 400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose
- One (1) handline nozzle, 200 gpm min
- Two (2) handline nozzles, 95 gpm min
- One (1) playpipe with shutoff and 1", 1.125", and 1.25" tips
- Four (4) SCBA apparatus

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- Four (4) SCBA spare cylinders
- One (1) first aid kit.
- Four (4) salvage covers, each a minimum size of 12 ft × 18 ft (3.6 m × 5.5 m).
- Four (4) combination spanner wrenches.
- Two (2) hydrant wrenches.
- One (1) double female 2.50" adapter with national hose (NH) thread.
- One (1) double male 2.50" adapter with national hose (NH) thread.
- One (1) rubber mallet, suitable for use on suction hose connections.
- One (1) 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 2500.
- One (1) 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 2500.
- One (1) automatic external defibrillator (AED).

**SOFT SUCTION HOSE PROVIDED BY FIRE DEPARTMENT**

Hose is not on the apparatus as manufactured. The fire department will provide suction or supply hose.

**DRY CHEMICAL EXTINGUISHER**

There will be One (1) extinguisher, 20 lb dry chemical extinguisher(s) provided.

**WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT**

The extinguisher is not on the apparatus as manufactured. The fire department will provide and mount the extinguisher.

**FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT**

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

**PICKHEAD AXE PROVIDED BY FIRE DEPARTMENT**

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

**PAINT PROCESS**

The exterior custom cab and body painting procedure will consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body will be thoroughly cleaned and prepared for painting. Imperfections on the exterior surfaces will be removed and sanded to a smooth finish. Exterior seams will be sealed before painting. Exterior surfaces that will not be painted include; chrome plating, polished stainless steel, anodized aluminum and bright aluminum treadplate.
2. Chemical Cleaning and Pretreatment - All surfaces will be chemically cleaned to remove dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well. The aluminum surfaces will be properly cleaned and treated using a high pressure, high temperature 4 step Acid Etch process. The steel and stainless surfaces will be properly cleaned and treated using a high temperature 3 step process specifically designed for steel or stainless. The chemical treatment converts the metal surface to a passive condition to help prevent corrosion.

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3. Surfacer Primer - The Surfacer Primer will be applied to a chemically treated metal surface to provide a strong corrosion protective basecoat. A minimum thickness of 2 mils of Surfacer Primer is applied to surfaces that require a Critical aesthetic finish. The Surfacer Primer is a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded.
4. Finish Sanding - The Surfacer Primer will be sanded with a fine grit abrasive to achieve an ultra-smooth finish. This sanding process is critical to produce the smooth mirror like finish in the topcoat.
5. Sealer Primer - The Sealer Primer is applied prior to the Basecoat in all areas that have not been previously primed with the Surfacer Primer. The Sealer Primer is a two-component high solids urethane that goes on smooth and provides excellent gloss hold out when topcoated.
6. Basecoat Paint - Two coats of a high performance, two component high solids polyurethane basecoat will be applied. The Basecoat will be applied to a thickness that will achieve the proper color match. The Basecoat will be used in conjunction with a urethane clear coat to provide protection from the environment.
7. Clear Coat - Two (2) coats of Clear Coat will be applied over the Basecoat color. The Clear Coat is a two-component high solids urethane that provides superior gloss and durability to the exterior surfaces. Lap style and roll-up doors will be Clear Coated to match the body. Paint warranty for the roll-up doors will be provided by the roll-up door manufacturer.

After the cab and body are painted, the color will be verified to make sure that it matches the color standard. Electronic color measuring equipment will be used to compare the color sample to the color standard entered into the computer. Color specifications will be used to determine the color match. A Delta E reading will be used to determine a good color match within each family color.

All removable items such as brackets, compartment doors, door hinges, and trim will be removed and painted separately if required, to ensure paint behind all mounted items. Body assemblies that cannot be finish painted after assembly will be finish painted before assembly.

The paint finish quality levels for critical areas of the apparatus (cab front and sides, body sides and doors, and boom lettering panels) are to meet or exceed Cadillac/General Motors GMW15777 global paint requirements. Orange peel levels are to meet or exceed the #6 A.C.T. standard in critical areas. The manufacture's written paint standards will be available upon request.

### **Environmental Impact**

Contractor will meet or exceed all current state regulations concerning paint operations. Pollution control will include measures to protect the atmosphere, water and soil. Controls will include the following conditions:

- Topcoats and primers will be chrome and lead free.
- Metal treatment chemicals will be chrome free. The wastewater generated in the metal treatment process will be treated on-site to remove any other heavy metals.
- Particulate emission collection from sanding operations will have a 99.99 percent efficiency factor.

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- Particulate emissions from painting operations will be collected by a dry filter or water wash process. If the dry filter is used, it will have an efficiency rating of 98 percent. Water wash systems will be 99.97 percent efficient.
- Water from water wash booths will be reused. Solids will be removed on a continual basis to keep the water clean.
- Paint wastes are disposed of in an environmentally safe manner.
- Empty metal paint containers will be recycled to recover the metal.
- Solvents used in clean-up operations will be recycled on-site or sent off-site for distillation and returned for reuse.

Additionally, the finished apparatus will not be manufactured with or contain products that have ozone depleting substances. Contractor will, upon demand, present evidence that the manufacturing facility meets the above conditions and that it is in compliance with his state EPA rules and regulations.

**CAB PAINT**

The cab will be painted #90 red.

**BODY PAINT**

The body will be painted to match the lower section of the cab.

**PAINT CHASSIS FRAME ASSEMBLY**

The chassis frame assembly will be finished with primer and gloss black paint before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

Components that are included with the chassis frame assembly that will be painted (unless otherwise stated in a secondary option) are:

- Frame rails
- Frame liners
- Cross members
- Axles
- Suspensions
- Steering gear
- Battery boxes
- Bumper extension weldment
- Frame extensions
- Body mounting angles
- Rear Body support substructure (front and rear)
- Pump house substructure
- Steel fuel tank
- Castings
- Individual piece parts used in chassis and body assembly

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Components treated with epoxy E-coat protection prior to paint:

- Two (2) C-channel frame rails
- Two (2) frame liners

The E-coat process will meet the technical properties shown.

**AXLE HUB PAINT**

All axle hubs will be painted to match lower job color.

**COMPARTMENT INTERIOR PAINT**

The interior of all compartments will be painted with a gray spatter finish for ease of cleaning and to make it easier to touch up scratches and nicks.

**AERIAL DEVICE PAINT COLOR**

The aerial device paint procedure will consist of a six (6) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the aerial device structural components above the rotation point will be thoroughly cleaned and mechanically shot-blasted to remove metal impurities and prepare the aerial for painting.
2. Primer/Surfacer Coats - A two (2) component urethane primer/surfacer will be applied to the mechanically shot-blasted metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface. All seams will be caulked with a two (2) component epoxy caulk before painting.
3. Hand Sanding - The primer/surfacer coat of the outer surfaces of the hand rails and base rails will be lightly sanded to a smooth finish.
4. Sealer Primer Coat - A two (2) component sealer primer coat will be applied over the sanded primer.
5. Topcoat Paint - Urethane base coat will be applied to opacity for correct color matching.
6. Clearcoat - Two (2) coats of an automotive grade two (2) component urethane will be applied.

Surfaces that will not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate.

All buy out components, such as monitor, nozzle, gauges, etc. will be supplied as received from the vendor.

Removable items such as brackets will be removed and painted separately to ensure paint coverage behind all mounted items.

The stabilizer beams, pedestal and torque box (including water tank cradle) will be treated with E-coat prior to painting to help provide resistance to corrosion and chemicals. The stabilizers and torque box will be painted black.

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The aerial device components will be painted as follows using the aforementioned six (6) step finishing process:

- Aerial device ladder sections and extension cylinders: black 101
- Aerial turntable: black 101 with zinc rich primer
- Aerial control console: black 101
- Aerial lift cylinders: black 101
- Aerial egress: #90 red (will be a contrasting color to the aerial device)
- Aerial boom support: black 101

**REFLECTIVE STRIPES**

Three (3) reflective stripes will be provided across the front of the vehicle and along the sides of the body. The reflective band will consist of a 1.00" gold stripe at the top with a 1.00" gap then a 6.00" black stripe with a 1.00" gap and a 1.00" gold stripe on the bottom.

The reflective band provided on the cab face will be at the headlight level.

**REAR CHEVRON STRIPING**

There will be alternating chevron striping located on the rear-facing vertical surface of the apparatus. Covered surfaces will include the rear wall and aluminum doors. Roll up doors and stainless steel access doors will not be covered in chevron.

The colors will be red and fluorescent yellow green diamond grade.

Each stripe will be 6.00" in width.

This will meet the requirements of the current edition of NFPA 1901, which states that 50% of the rear surface will be covered with chevron striping.

**REFLECTIVE STRIPE ON STABILIZERS**

There will be a 4.00" wide fluorescent yellow green diamond grade reflective stripe provided on the forward and rear facing side of all aerial stabilizers.

**FOLDED RIBBON IN REFLECTIVE STRIPE**

There will be one (1) pair(s) of a folded type ribbon(s) added to the reflective stripe, with the location being as follows: front body compartment, one each side..

**REFLECTIVE STRIPE OUTLINE**

A black outline will be applied on the top and the bottom of the reflective band. There will be two (2) set of outline stripes required.

**CAB DOOR REFLECTIVE STRIPE**

A 6.00" x 16.00" fluorescent yellow green diamond grade reflective stripe will be provided across the interior of each cab door. The stripe will be located approximately 1.00" up from the bottom, on the door panel.

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This stripe will meet the current edition of applicable NFPA standards.

**FIRE APPARATUS PARTS MANUAL**

There will be one (1) custom parts manual(s) in USB flash drive format for the complete fire apparatus provided.

The manual(s) will contain the following:

- Job number
- Part numbers with full descriptions
- Table of contents
- Parts section sorted in functional groups reflecting a major system, component, or assembly
- Parts section sorted in alphabetical order
- Instructions on how to locate parts

Each manual will be specifically written for the chassis and body model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

**Service Parts Internet Site**

The service parts information included in these manuals are also available on the Pierce website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

**CHASSIS SERVICE MANUALS**

There will be one (1) chassis service manuals on USB flash drives containing parts and service information on major components provided with the completed unit.

The manual will contain the following sections:

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- Engine
- Tires
- Wheels
- Cab
- Electrical, DC
- Air Systems
- Plumbing
- Appendix

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The manual will be specifically written for the chassis model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

**CHASSIS OPERATION MANUAL**

The chassis operation manual will be provided on two (2) USB flash drives. Manuals will be in the English language.

**ONE (1) YEAR MATERIAL AND WORKMANSHIP**

A Pierce basic apparatus limited warranty certificate, WA0008, is included with this proposal.

**ENGINE WARRANTY**

A Paccar five (5) year limited engine warranty will be provided. A limited warranty certificate is included with this proposal.

**STEERING GEAR WARRANTY**

A Sheppard **three (3) year** limited steering gear warranty will be provided. A copy of the warranty certificate will be submitted with this proposal.

**FIFTY (50) YEAR STRUCTURAL INTEGRITY**

The Pierce custom chassis frame only (does not include crossmembers) limited warranty certificate, WA0013, is included with this proposal.

**FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

The Pierce TAK-4 suspension limited warranty certificate, WA0050, is included with this proposal.

**SINGLE REAR AXLE FIVE (5) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

A Meritor™ Axle 5 year limited warranty will be provided.

**ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

A Meritor Wabco™ ABS brake system limited warranty certificate, WA0232, is included with this proposal.

**TEN (10) YEAR STRUCTURAL INTEGRITY**

The Pierce custom cab limited warranty certificate, WA0012, is included with this proposal.

**TEN (10) YEAR PRO-RATED PAINT AND CORROSION**

A Pierce cab limited pro-rated paint warranty certificate, WA0055, is included with this proposal.

**FIVE (5) YEAR MATERIAL AND WORKMANSHIP**

The Pierce Command Zone electronics limited warranty certificate, WA0014, is included with this proposal.

**CAMERA SYSTEM WARRANTY**

A Pierce fifty four (54) month warranty will be provided for the camera system.

**COMPARTMENT LIGHT WARRANTY**

The compartment lights will not offer an extended warranty.

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**TRANSMISSION WARRANTY**

The transmission will have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty will be provided by Allison Transmission.

Note: The transmission cooler is not covered under any extended warranty you may be getting on your Allison Transmission. Please review your Allison Transmission warranty for coverage limitations.

**TRANSMISSION COOLER WARRANTY**

The transmission cooler will carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty will also be in effect for the first three (3) years of the warranty coverage and will not exceed \$10,000 per occurrence. A copy of the warranty certificate will be included with this proposal.

**WATER TANK WARRANTY**

A UPF poly water tank limited warranty certificate, WA0195, is included with this proposal.

**TEN (10) YEAR STRUCTURAL INTEGRITY**

The Pierce apparatus body limited warranty certificate, WA0009, is included with this proposal.

**ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY**

An AMDOR roll-up door limited warranty will be provided. The roll-up door will be warranted against manufacturing defects for a period of **ten (10) years**. A **five (5) year** limited warranty will be provided on painted roll up doors.

The limited warranty certificate, WA0185, is included with this proposal.

**PUMP WARRANTY**

The Waterous pump will be provided with a seven (7) year material and workmanship limited warranty.

A copy of the warranty certificate will be included with this proposal.

**TEN (10) YEAR PUMP PLUMBING WARRANTY**

The Pierce apparatus plumbing limited warranty certificate, WA0035, is included with this proposal.

**TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY**

The Pierce device limited warranty certificate, WA0052, is included with this proposal.

**AERIAL SWIVEL WARRANTY**

An Amity five (5) year limited swivel warranty will be provided. A copy of the warranty certificate will be included with this proposal.

**HYDRAULIC SYSTEM COMPONENTS WARRANTY**

Aerial hydraulic system components will be provided with a five (5) year material and workmanship limited warranty.

**HYDRAULIC SEAL WARRANTY**

Aerial hydraulic seals will be provided with a three (3) year material and workmanship limited warranty.

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A copy of the warranty certificates is included with this proposal.

**AERIAL WATERWAY WARRANTY**

An Amity ten (10) year limited waterway warranty will be provided. A copy of the warranty certificate is included with this proposal.

**FOUR (4) YEAR PRO-RATED PAINT AND CORROSION**

A Pierce aerial device limited pro-rated paint warranty certificate, WA0047, is included with this proposal.

**TEN (10) YEAR PRO-RATED PAINT AND CORROSION**

A Pierce body limited pro-rated paint warranty certificate, WA0057, is included with this proposal.

**VEHICLE STABILITY CERTIFICATION**

The fire apparatus manufacturer will provide a certification stating the apparatus complies with NFPA 1900, current edition, section 7.14, Vehicle Stability. The certification is included with this proposal.

**ENGINE INSTALLATION CERTIFICATION**

The fire apparatus manufacturer will provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification will be provided at the time of delivery.

**POWER STEERING CERTIFICATION**

The fire apparatus manufacturer will provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification is included with this proposal.

**CAB INTEGRITY CERTIFICATION**

The fire apparatus manufacturer will provide a cab crash test certification with this proposal. The certification will state that a specimen representing the substantial structural configuration of the cab has been tested and certified by an independent third party test facility. Testing events will be documented with photographs, real-time and high-speed video, vehicle accelerometers, cart accelerometers, and a laser speed trap. The fire apparatus manufacturer will provide a state licensed professional engineer to witness and certify all testing events. Testing will meet or exceed the requirements below:

- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.
- European Occupant Protection Standard ECE Regulation No.29.
- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks.

**Side Impact**

The cab will be subjected to dynamic preload where a 14,320-lb moving barrier is slammed into the side of the cab at 5.50 mph, striking with an impact of 13,000 ft-lb of force. This test is part of the SAE J2422 test procedure and more closely represents the forces a cab will see in a rollover incident.

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**Frontal Impact**

The same cab will withstand a frontal impact of 32,600 ft-lb of force using a moving barrier in accordance with SAE J2420.

**Additional Frontal Impact**

The same cab will withstand a frontal impact of 65,098 ft-lb of force using a moving barrier. (Twice the force required by SAE J2420)

**Roof Crush**

The cab will be subjected to a roof crush force of 22,500 lb. This value meets the ECE 29 criteria, and is equivalent to the front axle rating up to a maximum of ten (10) metric tons.

**Additional Roof Crush**

The same cab will be subjected to a roof crush force of 110,000 lbs. (Four and a half times the load criteria of ECE 29)

The same cab will withstand all tests without any measurable intrusion into the survival space of the occupant area.

**CAB DOOR DURABILITY CERTIFICATION**

Robust cab doors help protect occupants. Cab doors will survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder will certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

**WINDSHIELD WIPER DURABILITY CERTIFICATION**

Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers will survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles*. The bidder will certify that the wiper system design has been tested and that the wiper system has met these criteria.

**ELECTRIC WINDOW DURABILITY CERTIFICATION**

Cab window roll-up systems can cause maintenance problems if not designed for long service life. The window regulator design will complete 30,000 complete up-down cycles and still function normally when finished. The bidder will certify that sample doors and windows similar to those provided on the apparatus have been tested and have met these criteria without malfunction or significant component wear.

**SEAT BELT ANCHOR STRENGTH**

Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design will withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder will certify that each anchor design was pull tested to the required force and met the appropriate criteria.

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**SEAT MOUNTING STRENGTH**

Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design will be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder will certify, at time of delivery, that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

**PERFORMANCE CERTIFICATIONS**

**Cab Air Conditioning**

Good cab air conditioning temperature and air flow performance keeps occupants comfortable, reduces humidity, and provides a climate for recuperation while at the scene. The cab air conditioning system will cool the cab from a heat-soaked condition at 100 degrees Fahrenheit to an average of 78 degrees Fahrenheit in 30 minutes. The bidder will certify that a substantially similar cab has been tested and has met these criteria.

**Cab Defroster**

Visibility during inclement weather is essential to safe apparatus performance. The defroster system will clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure And Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder will certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

**Cab Auxiliary Heater**

Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. An auxiliary cab heater will warm the cab 77 degrees Fahrenheit from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder will certify, at time of delivery, that a substantially similar cab has been tested and has met these criteria.

**AMP DRAW REPORT**

The bidder will provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

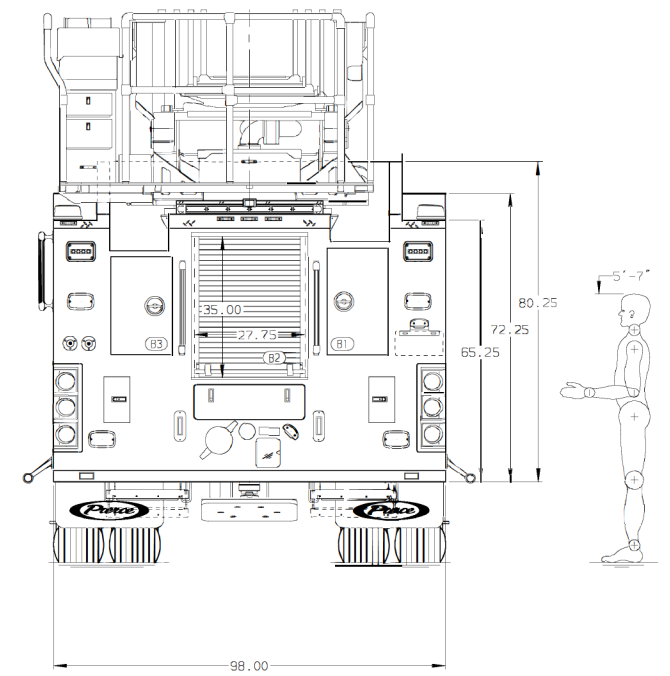
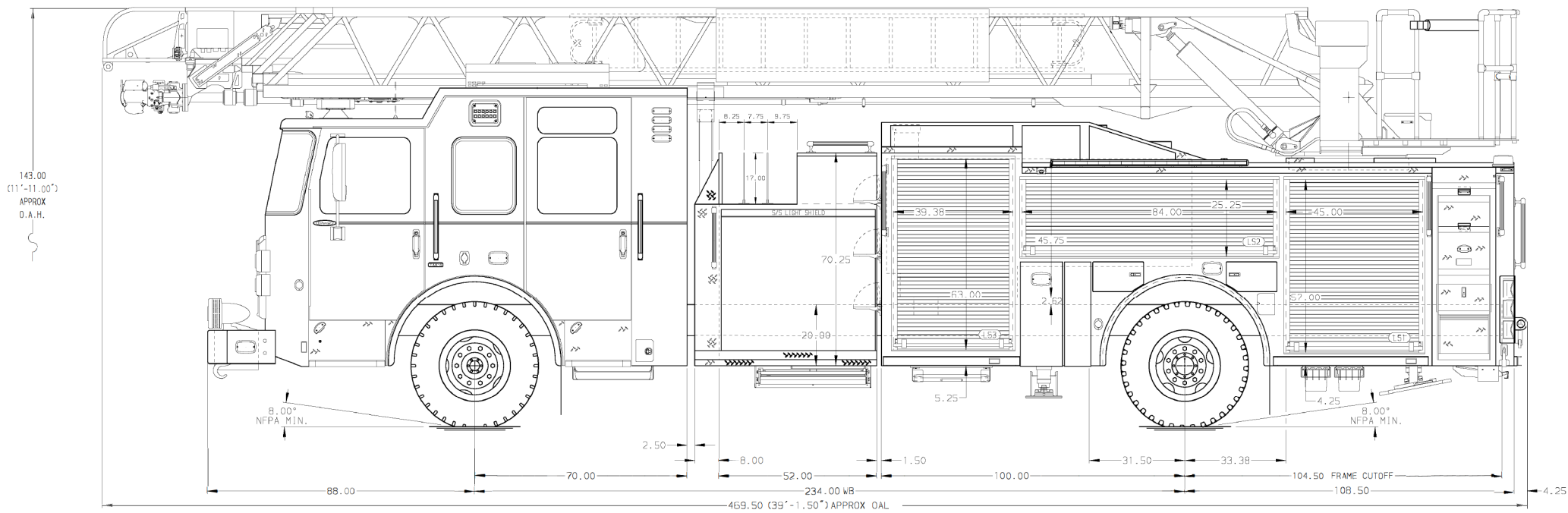
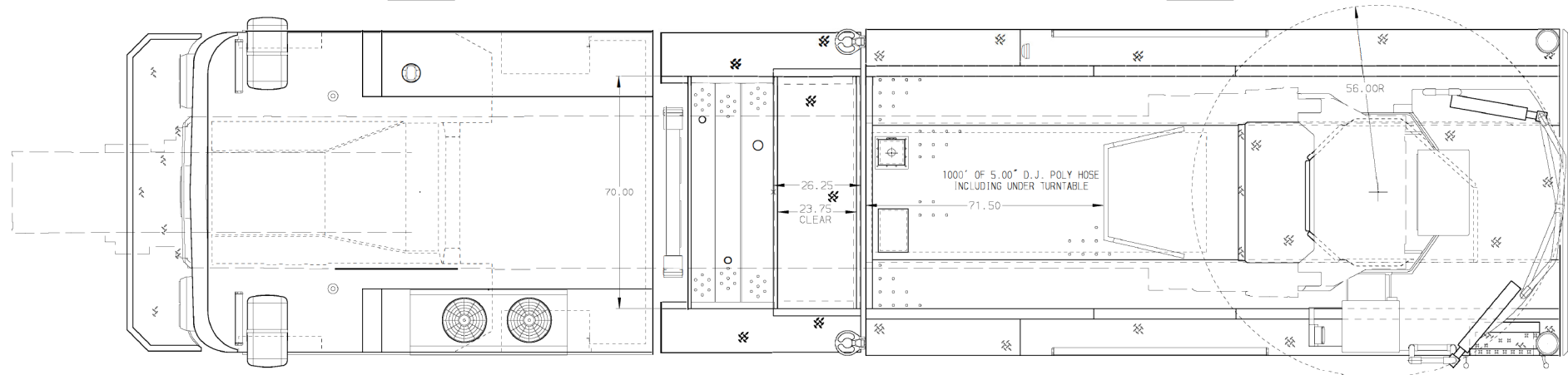
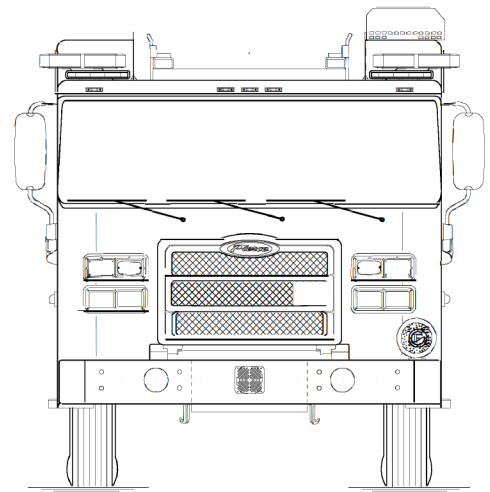
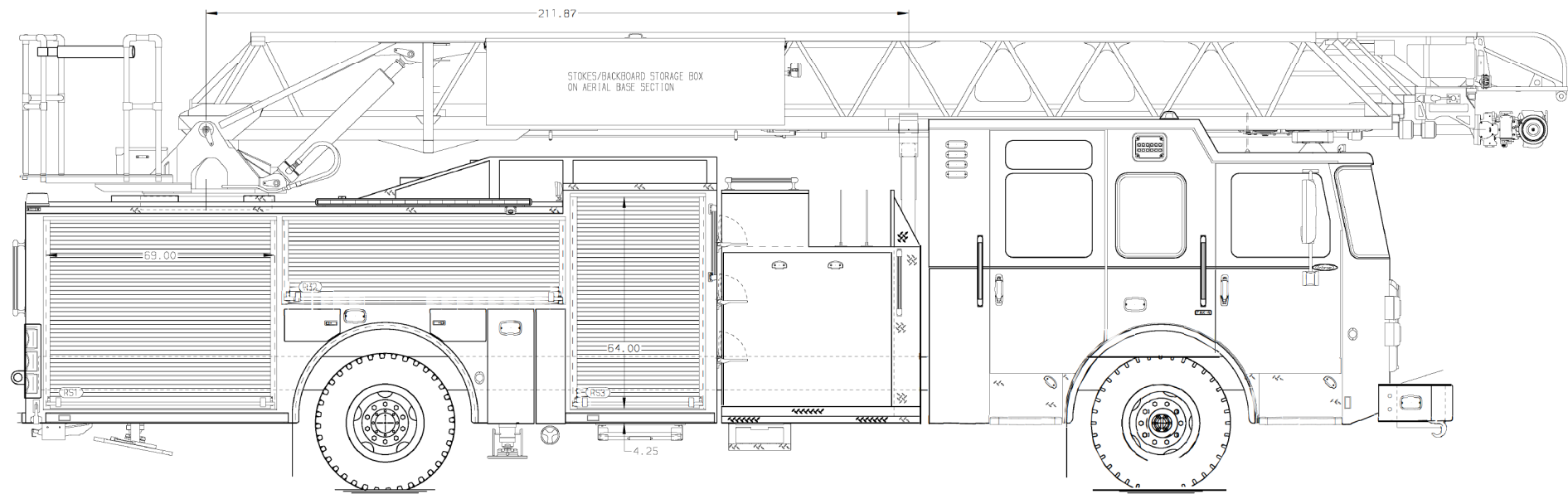
The manufacturer of the apparatus will provide the following:

- Documentation of the electrical system performance tests.
- A written load analysis, which will include the following:
  - The nameplate rating of the alternator.
  - The alternator rating under the conditions specified per:
    - Current edition of applicable NFPA standards.
  - The minimum continuous load of each component that is specified per:
    - Current edition of applicable NFPA standards.
  - Additional loads that, when added to the minimum continuous load, determine the total connected load.

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- Each individual intermittent load.

All of the above listed items will be provided by the bidder per the current edition of applicable NFPA standards.



**NOTE**  
 DIMENSIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MINOR DEVIATIONS AS MAY OCCUR OR BE NECESSARY IN CONSTRUCTION. MINOR DETAILS NOT SHOWN.

REV	DATE	BY	CH

		JOB NO.	PRELIM
		SCALE	DATE
TITLE	107' ASCENDANT AERIAL LADDER AND BODY ASSEMBLY	DRAWN BY	LWE
FOR	PIERCE FIELD UNIT STRUM, ANDY	CHECKED BY	-
DWG NO.	BID 2723	SHEET SIZE	SHEET NO.
		D	1 OF 1

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**SINGLE SOURCE MANUFACTURER**

Pierce Manufacturing, Inc. provides an integrated approach to the design and manufacture of our products that delivers superior apparatus and a dedicated support team. From our facilities, the chassis, cab weldment, cab, pump house (including the sheet metal enclosure, valve controls, piping and operators panel) body and aerial device will be entirely designed, tested, and hand assembled to the customer's exact specifications. The electrical system either hardwired or multiplexed, will be both designed and integrated by Pierce Manufacturing. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) will be provided by Pierce as a single source manufacturer. Pierce's single source solution adds value by providing a fully engineered product that offers durability, reliability, maintainability, performance, and a high level of quality.

Your apparatus will be manufactured in Appleton, Wisconsin.

**NFPA 2024 STANDARDS**

This unit will comply with the NFPA standards effective January 1, 2024, except for fire department directed exceptions. These exceptions will be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing and walking surfaces will be supplied with delivery of the apparatus.

All horizontal surfaces designated as a standing or walking surface that are greater than 48.00" above the ground must be defined by a 1.00" wide line along its outside perimeter. Perimeter markings and designated access paths to destination points will be identified on the customer approval print and are shown as approximate. Actual location(s) will be determined based on materials used and actual conditions at final build. Access paths may pass through hose storage areas and opening or removal of covers or restraints may be required. Access paths may require the operation of devices and equipment such as the aerial device or ladder rack.

A plate that is highly visible to the driver while seated will be provided. This plate will show the overall height, length, and gross vehicle weight rating.

The manufacturer will have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company will designate, in writing, who is qualified to witness and certify test results.

**NFPA COMPLIANCY**

Apparatus proposed by the bidder will meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications will be indicated in the proposal as "non-NFPA".

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### **INSPECTION CERTIFICATE**

A third party inspection certificate for the aerial device will be furnished upon delivery of the aerial device. The certificate will be Underwriters Laboratories Inc. Type 1 and will indicate that the aerial device has been inspected on the production line and after final assembly.

Visual structural inspections will be performed on all welds on both aluminum and steel ladders.

On critical weld areas, or on any suspected defective area, the following tests will be conducted:

- Magnetic particle inspection will be conducted on steel aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. Magnets will be placed on each side of the weld while iron powder is placed on the weld itself. The powder will detect any crack that may exist. This test will conform to ASTM E709 and be performed prior to assembly of the aerial device.
- A liquid penetrant test will be conducted on aluminum aerials to assure the integrity of the weldments and to detect any flaws or weaknesses. This test will conform to ASTM E165 and be performed prior to assembly of the aerial device.
- Ultrasonic inspection will be conducted on all aerials to detect any flaws in pins, bolts and other critical mounting components.

In addition to the tests above, functional tests, load tests, and stability tests will be performed on all aerials. These tests will determine any unusual deflection, noise, vibration, or instability characteristics of the unit.

### **PUMP TEST**

The pump will be tested, approved and certified by Underwriter's Laboratory at the manufacturer's expense. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the manufacturer's record of pump construction details will be forwarded to the Fire Department.

### **VEHICLE INSPECTION PROGRAM CERTIFICATION**

To assure the vehicle is built to current NFPA 1900 standards, the apparatus, in its entirety, will be third-party, independent, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition. The certification includes: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus.

A placard will be affixed in the driver's side area stating the third party agency, the date, the standard and the certificate number of the whole vehicle audit.

### **PERFORMANCE BOND NOT REQUESTED**

A performance bond will not be included. If requested at a later date, one will be provided to you for an additional cost and the following will apply:

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The successful bidder will furnish a Performance and Payment bond (Bond) equal to 100 percent of the total contract amount within 30 days of the notice of award. Such Bond will be in a form acceptable to the Owner and issued by a surety company included within the Department of Treasury's Listing of Approved Sureties (Department Circular 570) with a minimum A.M. Best Financial Strength Rating of A and Size Category of XV. In the event of a bond issued by a surety of a lesser Size Category, a minimum Financial Strength rating of A+ is required.

Bidder and Bidder's surety agree that the Bond issued hereunder, whether expressly stated or not, also includes the surety's guarantee of the vehicle manufacturer's Bumper to Bumper warranty period included within this proposal. Owner agrees that the penal amount of this bond will be simultaneously amended to 25 percent of the total contract amount upon satisfactory acceptance and delivery of the vehicle(s) included herein. Notwithstanding anything contained within this contract to the contrary, the surety's liability for any warranties of any type will not exceed three (3) years from the date of such satisfactory acceptance and delivery, or the actual Bumper to Bumper warranty period, whichever is shorter.

Due to global supply chain constraints, any delivery date contained herein is a good faith estimate as of the date of this order/contract, and merely an approximation based on current information. Delivery updates will be made available, and a final firm delivery date will be provided as soon as possible.

If the Producer Price Index of Components for Manufacturing [www.bls.gov Series ID: WPUID6112] ("PPI") has increased at a compounded annual growth rate of 5.0% or more between the month Pierce accepts the order ("Order Month") and a month 14 months prior to the then predicted Ready For Pickup date ("Evaluation Month"), then pricing may be updated in an amount equal to the increase in PPI over 5.0% for each year or fractional year between the Order Month and the Evaluation Month.

The seller will document any such updated price for the customer's approval before proceeding and provide an option to cancel the order.

#### **APPROVAL DRAWING**

A drawing of the proposed apparatus will be prepared and provided to the purchaser for approval before construction begins. The Pierce sales representative will also be provided with a copy of the same drawing. The finalized and approved drawing will become part of the contract documents. This drawing will indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus will be prepared and submitted by Pierce to the purchaser showing any changes made to the approval drawing.

#### **ELECTRICAL WIRING DIAGRAMS**

Two (2) electrical wiring diagrams, prepared for the model of chassis and body, will be provided.

#### **ENFORCER CHASSIS**

The Pierce Enforcer™ is the custom chassis developed exclusively for the fire service. Chassis provided will be a new, tilt-type custom fire apparatus. The chassis will be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis will be designed and

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manufactured for heavy-duty service, with adequate strength, capacity for the intended load to be sustained, and the type of service required. The chassis will be the manufacturer's first line tilt cab.

### **WHEELBASE**

The wheelbase of the vehicle will be 234".

### **GVW RATING**

The gross vehicle weight rating will be 56,300#.

### **FRAME**

The chassis frame will be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails will have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to 10.75" over the rear axle. Each rail will have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 in-lb over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 in-lb over the rear axle. The frame rails will be constructed of 120,000 psi yield strength heat-treated 0.38" thick steel with 3.50" wide flanges.

### **FRAME REINFORCEMENT**

In addition, a mainframe internal liner will be provided. The liner will be an internal "C" design that steps to an internal "L" design over the rear axle. It will be heat-treated steel measuring 12.50" x 3.00" x 0.25" through the front portion of the liner, stepping to 9.38" x 3.00" x 0.25" through the rear portion of the liner. Each liner will have a section modulus of 13.58 cubic inches, yield strength of 110,000 psi, and rbm of 1,494,042 in-lb. Total rbm at wheelbase center will be 4,391,869 in-lb.

The frame liner will be mounted inside of the chassis frame rail and extend the full length of the frame.

### **FRONT NON DRIVE AXLE**

The Oshkosh TAK-4® front axle will be of the independent suspension design with a ground rating of 22,800 lb.

Upper and lower control arms will be used on each side of the axle. Upper control arm castings will be made of 100,000-psi yield strength 8630 steel and the lower control arm casting will be made of 55,000-psi yield ductile iron.

The center cross members and side plates will be constructed out of 80,000-psi yield strength steel.

Each control arm will be mounted to the center section using elastomer bushings. These rubber bushings will rotate on low friction plain bearings and be lubricated for life. Each bushing will also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations.

There will be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension.

The upper control arm will be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load.

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Camber at load will be zero degrees for optimum tire life.

The ball joint bearing will be of low friction design and be maintenance free.

Toe links that are adjustable for alignment of the wheel to the center of the chassis will be provided.

The wheel ends will have little to no bump steer when the chassis encounters a hole or obstacle.

The steering linkage will provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase.

The axle will have a turning angle of up to 45 degrees.

### **FRONT SUSPENSION**

Front Oshkosh TAK-4™ independent suspension will be provided with a minimum ground rating of 22,800 lb.

The independent suspension system will be designed to provide maximum ride comfort. The design will allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment.

Each wheel will have torsion bar type spring. In addition, each front wheel end will also have energy absorbing jounce bumpers to prevent bottoming of the suspension.

The suspension design will be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms.

The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side.

The independent suspension was put through a durability test that simulated 140,000 miles of inner city driving.

### **FRONT SHOCK ABSORBERS**

KONI heavy-duty telescoping shock absorbers will be provided on the front suspension.

### **FRONT OIL SEALS**

Oil seals with viewing window will be provided on the front axle.

### **FRONT TIRES**

Front tires will be Goodyear 425/65R22.50 radials, 20 ply Armor Max MSA, rated for 22,800 lb maximum axle load and 68 mph maximum speed.

The tires will be mounted on Alcoa 22.50" x 12.25" polished aluminum disc type wheels with a ten (10) stud, 11.25" bolt circle.

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**REAR AXLE**

The rear axle will be a Meritor™, Model RS-30-185, with a capacity of 33,500 lb.

**TOP SPEED OF VEHICLE**

NFPA 1900 and ULC 515, 2024 edition requires limits on the top speed of vehicles. NFPA 7.16.1 requires that the maximum top speed of fire apparatus with a GVWR over 33,000 lb will not exceed either 68 mph or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower. NFPA 7.16.2 requires that if the combined water tank and foam agent tank on the fire apparatus exceed 1250 gallons or the GVWR of the vehicle is over 50,000 lb, the maximum top speed of the apparatus will not exceed either 60 mph or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower. It is the intention of the standard to improve safety by limiting the speed of all apparatus to 68 mph, and tankers or heavy apparatus to 60 mph. By requesting an exception to this requirement, the purchasing authority is consciously choosing to operate their apparatus at speeds above the limits designated as safe speeds by the NFPA Technical Committee on Fire Department Apparatus.

The top speed of the apparatus as manufactured exceeds the NFPA requirements. Per fire department specification of a top speed that exceeds NFPA requirements, the apparatus will be non-compliant to NFPA 1900 and ULC 515 standards at time of contract execution.

The rear tires being specified have a top speed limit of 68 mph / 109 kph from the tire manufacturer.

**REAR SUSPENSION**

The rear suspension will be Standens, semi-elliptical, 3.00" wide x 52.50" long, with a ground rating of 33,500 lb. The spring hangers will be castings.

The two (2) top leaves will wrap the forward spring hanger pin, and the rear of the spring will be a slipper style end that will ride in a rear slipper hanger.

A steel encased rubber bushing will be used in the spring eye. The steel encased rubber bushing will be maintenance free and require no lubrication.

**REAR OIL SEALS**

Oil seals will be provided on the rear axle(s).

**AUXILIARY SPRING**

The rear suspension will be furnished with a Timbren auxiliary spring package.

**REAR TIRES**

Rear tires will be four (4) Goodyear 315/80R22.50 radials with 20 ply G289 WHA tread, rated for 36,360 lb maximum axle load and 68 mph maximum speed.

The tires will be mounted on Accuride® 22.50" x 9.00" polished aluminum disc wheels with a ten (10) stud, 11.25" bolt circle.

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**TIRE BALANCE**

All tires will be balanced with Counteract balancing beads. The beads will be inserted into the tire and eliminate the need for wheel weights.

**TIRE PRESSURE MANAGEMENT**

There will be a RealWheels LED AirSecure™ tire alert pressure management system provided, that will monitor each tire's pressure. A sensor will be provided on the valve stem of each tire for a total of six (6) tires.

The sensor will calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi. The sensor will activate an integral battery operated LED when the pressure of that tire drops 5 to 8 psi.

Removing the cap from the sensor will indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED will immediately start to flash.

**CHROME LUG NUT COVERS**

Chrome plastic lug nut covers will be supplied on front and rear wheels.

**FRONT HUB COVERS**

Stainless steel hub covers will be provided on the front axle. An oil level viewing window will be provided.

**REAR HUB COVERS**

A pair of stainless steel high hat hub covers will be provided on rear axle hubs.

**MUD FLAPS**

Mud flaps with a Pierce logo will be installed behind the front and rear wheels.

**WHEEL CHOCKS**

There will be one (1) pair of Worden Safety Products, Model HWG-SB, wheel chocks provided.

Heavy Duty, large molded aluminum wheel chock with solid bottom, natural cast aluminum finish.

**Wheel Chock Brackets**

There will be one (1) pair of Worden Safety, Model U815T, mounting wheel chock brackets provided. The brackets will be mounted rear of driver side rear axle..

**ELECTRONIC STABILITY CONTROL**

A vehicle control system will be provided as an integral part of the ABS brake system from Meritor Wabco.

The system will monitor and update the lateral acceleration of the vehicle and compare it to a critical threshold where a side roll event may occur. If the critical threshold is met, the vehicle control system will automatically reduce engine RPM, engage the engine retarder (if equipped), and selectively apply

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brakes to the individual wheel ends of the front and rear axles to reduce the possibility of a side roll event.

The system will monitor directional stability through a lateral accelerometer, steer angle sensor and yaw rate sensor. If spinout or drift out is detected, the vehicle control system will selectively apply brakes to the individual wheel ends of the front and rear axles to bring the vehicle back to its intended direction.

### **ANTI-LOCK BRAKE SYSTEM**

The vehicle will be equipped with a Wabco 4S4M, anti-lock braking system. The ABS will provide a four (4) channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology will control the anti-lock braking system. Each wheel will be monitored by the system. When any wheel begins to lockup, a signal will be sent to the control unit. This control unit will then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system will eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

### **AUTOMATIC TRACTION CONTROL**

An anti-slip feature will be included with the ABS. The Automatic Traction Control will be used for traction in poor road and weather conditions. The Automatic Traction Control will act as an electronic differential lock that will not allow a driving wheel to spin, thereby supplying traction at all times. The ABS electronic control unit (ECU) will work with the engine ECU, sharing information concerning wheel slip. Engine ECU will use information to control engine speed, allowing only as much throttle application as required for the available traction, regardless of how much the driver is asking for. An "off road traction" switch will be provided on the instrument panel. Activation of the switch will allow additional tire slip to let the truck climb out and get on top of deep snow or mud.

### **BRAKES**

The service brake system will be full air type.

The front brakes will be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system will be certified, third party inspected, for improved stopping distance.

The rear brakes will be Meritor™ 16.50" x 8.63" cam operated with automatic slack adjusters. Dust shields cannot be provided.

### **AIR COMPRESSOR, BRAKE SYSTEM**

The air compressor will be a Wabco single piston compressor with a 26.8 CI displacement.

### **BRAKE SYSTEM**

The brake system will include:

- Brake treadle valve
- Heated automatic moisture ejector on air dryer
- Total air system minimum capacity of 5,376 cubic inches

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- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a push-pull style control valve
- A parking "brake on" indicator light on instrument panel
- Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, with an automatic spring brake application at 40 psi
- A pressure protection valve to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa)
- 1/4 turn drain valves on each air tank

The air tank will be primed and painted to meet a minimum 750 hour salt spray test.

The air tanks will be painted same as frame color.

To reduce the effects of corrosion, the air tank will be mounted with stainless steel brackets.

**BRAKE SYSTEM AIR DRYER**

The air dryer will be WABCO System Saver 1200 with spin-on coalescing filter cartridge and 100 watt heater.

**BRAKE LINES**

Color-coded nylon brake lines will be provided. The lines will be wrapped in a heat protective loom in the chassis areas that are subject to excessive heat.

**AIR INLET**

One (1) air inlet with 3D series male coupling will be provided. It will allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet will be located forward in the driver side lower step well of cab. A check valve will be provided to prevent reverse flow of air. The inlet will discharge into the "wet" tank of the brake system. A mating female fitting will also be provided with the loose equipment.

**ALL WHEEL LOCK-UP**

An additional all wheel lock-up system will be installed which applies air to the front brakes only. The standard spring brake control valve system will be used for the rear.

**ENGINE**

The chassis will be powered by an electronically controlled engine as described below:

Make:	Paccar
Model:	MX
Power:	510 hp at 1600rpm
Torque:	1850 lb-ft at 1000rpm
Governed Speed:	1900 rpm
Emissions	EPA 2027

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Certification:	
Fuel:	Diesel
Cylinders:	Six (6)
Displacement:	13.7L
Starter:	DP60
Fuel Filters:	Dual cartridge style with check valve, water separator, and water in fuel sensor

The engine will include On-board diagnostics (OBD), which provides self diagnostic and reporting. The system will give the owner or repair technician access to state of health information for various vehicle sub systems. The system will monitor vehicle systems, engine and after treatment. The system will illuminate a malfunction indicator light on the dash console if a problem is detected.

### **HIGH IDLE**

A high idle switch will be provided, inside the cab, on the instrument panel, that will automatically maintain a preset engine rpm. A switch will be installed, at the cab instrument panel, for activation/deactivation.

The high idle will be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light will be provided, adjacent to the switch. The light will illuminate when the above conditions are met. The light will be labeled "OK to Engage High Idle."

### **ENGINE BRAKE**

The compression release brake option is a fully integrated MX engine braking system. It utilizes the turbocharger and back pressure valve, but adds in a hydraulically operated compression brake to increase overall retarding power.

To maximize the effectiveness of the compression brake the MX engine brake system works in conjunction with the turbocharger and back pressure valve.

The driver will be able to turn the engine brake system on/off and have a high, medium and low setting.

### **CLUTCH FAN**

A fan clutch will be provided. The fan clutch will be automatic when the pump transmission is in "Road" position, and constantly engaged when in "Pump" position.

### **ENGINE AIR INTAKE**

The engine air intake will be located above the engine cooling package. It will draw fresh air from the front of the apparatus through the radiator grille.

A stainless steel metal screen will be installed at the inlet of the air intake system that will meet current edition of applicable NFPA standards.

The air cleaner and stainless steel screen will be easily accessible by tilting the cab.

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### **EXHAUST SYSTEM**

The exhaust system will be stainless steel from the turbo to the engine's aftertreatment device. The exhaust system will include an aftertreatment device to meet current EPA standards. An insulation wrap will be provided on all exhaust pipe between the turbo and the aftertreatment device to minimize the transfer of heat to the cab.

The exhaust will terminate horizontally ahead of the right side rear wheels and will be flush with the body rub rail. The exhaust pipes will be aluminized steel.

There will be an aluminized steel exhaust diffuser with a standard straight tip on the end provided to reduce the temperature of the exhaust as it exits. Heat deflector shields will be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

### **RADIATOR**

The radiator and the complete cooling system will meet or exceed the current edition of applicable NFPA and engine manufacturer cooling system standards.

For maximum corrosion resistance and cooling performance, the entire radiator core will be constructed using long life aluminum alloy. The radiator core will consist of aluminum fins, having a serpentine design, brazed to aluminum tubes.

The radiator core will have a minimum front area of 1060 square inches.

Supply tank will be made of heavy duty glass-reinforced nylon and the return tank will be made of aluminum. Both tanks will be crimped onto the core assembly using header tabs and a compression gasket to complete the radiator core assembly. There will be a full steel frame around the inserts to enhance cooling system durability and reliability.

The radiator will be compatible with commercial antifreeze solutions.

The radiator assembly will be isolated from the chassis frame rails with rubber isolators to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven terrain.

The radiator will include a de-aeration/expansion tank. For visual coolant level inspection, the radiator will have a built-in sight glass. The radiator will be equipped with a 15 psi pressure relief cap.

A drain port will be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

Shields or baffles will be provided to prevent recirculation of hot air to the inlet side of the radiator.

### **COOLANT LINES**

Gates, or Goodyear, rubber hose will be used for all engine coolant lines installed by Pierce Manufacturing.

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Hose clamps will be stainless steel constant torque type to prevent coolant leakage. They will expand and contract according to coolant system temperature thereby keeping a constant clamping pressure on the hose.

### **FUEL TANK**

A 65 gallon fuel tank will be provided and mounted at the rear of the chassis. The tank will be constructed of 12-gauge, hot rolled steel. It will be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank will be mounted with stainless steel straps.

A 0.75" drain plug will be located in a low point of the tank for drainage.

A fill inlet will be located on the left hand side of the body and is covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only."

A 0.50" diameter vent will be installed from tank top to just below fuel fill inlet.

The fuel tank will meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume.

All fuel lines will be provided as recommended by the engine manufacturer.

### **DIESEL EXHAUST FLUID TANK**

A 7.3 gallon diesel exhaust fluid (DEF) tank will be provided and mounted under the cab on the driver's side.

A fill inlet will be provided on the driver's side of the cab. The door will be vertically hinged and secured by a SouthCo M1 medium stainless steel compression latch and be painted.

The tank will meet the engine manufacturers requirement for 10 percent expansion space in the event of tank freezing.

The tank will include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

### **FUEL FILL DOOR**

Fuel fill door will be painted job color.

### **TRANSMISSION**

An Allison 6th generation, Model EVS 4000P, electronic, torque converting, automatic transmission will be provided.

The transmission will be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display will indicate when service is due.

Two (2) PTO openings will be located on left side and top of converter housing (positions 8 o'clock and 1 o'clock).

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A transmission temperature gauge with an amber light and buzzer will be installed on the cab instrument panel.

**TRANSMISSION SHIFTER**

A six (6)-speed push button shift module will be mounted to right of driver on console. Shift position indicator will be indirectly lit for after dark operation.

The transmission ratio will be:

1st	3.51 to 1.00
2nd	1.91 to 1.00
3rd	1.43 to 1.00
4th	1.00 to 1.00
5th	0.75 to 1.00
6th	0.64 to 1.00
R	4.80 to 1.00

**TRANSMISSION COOLER**

A Modine plate and fin transmission oil cooler will be provided using engine coolant to control the transmission oil temperature.

**DRIVELINE**

Drivelines will be a heavy-duty metal tube and be equipped with Spicer® 1810 universal joints.

The shafts will be dynamically balanced before installation.

A splined slip joint will be provided in each driveshaft where the driveline design requires it. The slip joint will be coated with Glidecoat® or equivalent.

**STEERING**

Dual Sheppard, Model M110, steering gears, with integral heavy-duty power steering, will be provided. For reduced system temperatures, the power steering will incorporate an air to oil cooler and Paccar hydraulic pump with integral pressure and flow control. All power steering lines will have wire braded lines with crimped fittings.

A tilt and telescopic steering column will be provided to improve fit for a broader range of driver configurations.

**STEERING WHEEL**

The steering wheel will be 18.00" in diameter, have tilting and telescoping capabilities, and a four (4)-spoke design.

There will be a switch pod provided on the left side of the steering wheel between the spokes. The switch pods will be an integral part of the steering wheel.

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The following switches will be provided:

- Windshield wash
- Wiper intermittent speed increase
- Wiper intermittent speed decrease
- Hi/Lo wiper speed
- Wiper off

### **BUMPER**

A one (1)-piece bumper manufactured from 0.25" formed steel with a 0.38" bend radius will be provided. The bumper will be a minimum of 10.00" high with a 1.50" top and bottom flange, and will extend 19.00" from the face of the cab. The bumper will be 95.28" wide with 45 degree corners and side plates.

To provide adequate support strength, the bumper will be mounted directly to the front of the C channel frame. The frame will be a bolted modular extension frame constructed of 50,000 psi tensile steel.

The bumper will be metal finished and painted to match the lower job color of the apparatus.

### **Gravel Pan**

A gravel pan, constructed of bright aluminum treadplate, will be furnished between the bumper and the cab face. The pan will be properly supported from the underside to prevent flexing and vibration.

### **CENTER HOSE TRAY**

A hose tray, constructed of aluminum, will be placed in the center of the bumper extension.

The tray will have a capacity of 125' of 1.75" double jacket cotton-polyester hose.

Black rubber grating will be provided at the bottom of the tray. Drain holes are also provided.

### **Center Hose Tray Cover**

A bright aluminum treadplate cover will be provided over the center hose tray.

The cover will be attached with a stainless steel hinge.

One (1) D-ring latch will secure the cover in the closed position and a pneumatic stay arm will hold the cover in the open position.

### **TOW HOOKS**

Two (2) chromed steel tow hooks will be installed under the bumper and attached to the front frame members. The tow hooks will be designed and positioned to allow up to a 6,000 lb straight horizontal pull in line with the centerline of the vehicle. The tow hooks will not be used for lifting of the apparatus.

### **FRONT BUMPER UL-LX COATING**

Protective black UL-LX® coating will be provided on the outside exterior of the top front bumper flange. It will not be sprayed on the underside of the flange.

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The lining will be properly installed by an authorized UL-LX dealer.

**CAB**

The Enforcer cab will be designed specifically for the fire service and manufactured by the chassis builder.

The cab will be built by the apparatus manufacturer in a facility located on the manufacturer's premises.

For reasons of structural integrity and enhanced occupant protection, the cab will be a heavy duty design, constructed to the following minimal standards.

The cab will have 12 main vertical structural members located in the A-pillar (front cab corner posts), B-pillar (side center posts), C-pillar (rear corner posts), and rear wall areas. The A-pillar will be constructed of solid A356-T5 aluminum castings. The B-pillar and C-pillar will be constructed from 0.13" wall extrusions. The rear wall will be constructed of two (2) 2.00" x 2.00" outer aluminum extrusions and two (2) 2.00" x 1.00" inner aluminum extrusions. All main vertical structural members will run from the floor to 4.625" x 3.864" x 0.090" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.25" thick corner casting at each of the front corners of the roof assembly.

The front of the cab will be constructed of a 0.13" firewall plate, covered with a minimum 0.090" front skin thickness, and reinforced with a full width x 0.50" thick cross-cab support located just below the windshield and fully welded to the engine tunnel. The cross-cab support will run the full width of the cab and weld to each A-pillar, the 0.13" firewall plate, and the front skin.

The cab floors will be constructed of 0.125" thick aluminum plate and reinforced at the firewall with an additional 0.375" thick cross-floor support providing a total thickness of 0.50" of structural material at the front floor area. The front floor area will also be supported with two (2) triangular 0.30" wall extrusions that also provides the mounting point for the cab lift. This tubing will run from the floor wireway of the cab to the engine tunnel side plates, creating the structure to support the forces created when lifting the cab.

The cab will be 96.00" wide (outside door skin to outside door skin) to maintain maximum maneuverability.

The centerline of front axle to the rear of the cab will be 70.00" long.

The forward cab section will have an overall height (from the cab roof to the ground) of approximately 99.00". The crew cab section will have a 10.00" raised roof, with an overall cab height of approximately 109.00". The overall height listed will be calculated based on a truck configuration with the lowest suspension weight rating, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension will increase the overall height listed.

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The raised roof section of the crew cab will have a 58.00" wide x 10.00" high square notch in the center section of the roof. This will allow the aerial device to be bedded in the same location as a non-raised roof.

The floor to ceiling height inside the crew cab will be 54.50" in the center position and 64.50" in the outboard positions.

The crew cab floor will measure 46.00" from the rear wall to the back side of the rear facing seat risers.

The medium block engine tunnel, at the rearward highest point (knee level), will measure 61.50" to the rear wall. The big block engine tunnel will measure between 45.00" and 51.50" to the rear wall.

The crew cab will be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.

The cab will be a full tilt cab style.

A 3-point cab mount system with rubber isolators will improve ride quality by isolating chassis vibrations from the cab.

#### **CAB ROOF DRIP RAIL**

For enhanced protection from inclement weather, a drip rail will be furnished on the sides of the cab. The drip rail will be painted to match the cab roof, and bonded to the sides of the cab. The drip rail will extend the full length of the cab roof.

#### **FENDER LINERS**

Full circular inner fender liners in the wheel wells will be provided.

#### **PANORAMIC WINDSHIELD**

A one (1)-piece safety glass windshield will be provided with over 2,775 square inches of clear viewing area. The windshield will be full width and will provide the occupants with a panoramic view. The windshield will consist of three (3) layers: outer light, middle safety laminate, and inner light. The outer light layer will provide superior chip resistance. The middle safety laminate layer will prevent the windshield glass pieces from detaching in the event of breakage. The inner light will provide yet another chip resistant layer. The cab windshield will be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern will be applied on the outside perimeter of the windshield for a finished automotive appearance.

#### **WINDSHIELD WIPERS**

Three (3) electric windshield wipers with washer will be provided that meet FMVSS and SAE requirements.

The washer reservoir will be able to be filled without raising the cab.

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### **ENGINE TUNNEL**

Engine tunnel side walls will be constructed of 0.375" aluminum. The top will be constructed of 0.125" aluminum and will be tapered at the top to allow for more driver and passenger elbow room.

The engine tunnel will be insulated for protection from heat and sound. Perforated foil faced insulation will be over a closed cell foam affixed with pressure sensitive adhesive and further secured with mechanical fasteners. The noise insulation keeps the dBA level within the limits stated in the current edition of applicable NFPA standards.

The engine tunnel will be no higher than 17.00" off the crew cab floor.

### **INSULATION PACKAGE**

All insulation utilized in the cab construction will be provided for extreme climate temperatures. The insulation will be provided in the following areas:

- Engine tunnel
- Cab and crew cab floors
- Cab and crew cab doors
- Cab roof
- Cab and crew cab walls

### **INTERIOR CREW CAB REAR WALL ADJUSTABLE SEATING (PATENT PENDING)**

The interior rear wall of the crew cab will have mounting holes every 2.75" to allow for adjustability of the forward facing crew cab seating along the rear wall. Seats will be adjustable with use of simple hand tools allowing departments flexibility of their seating arrangement should their department needs change.

### **CAB REAR WALL EXTERIOR COVERING**

The exterior surface of the rear wall of the cab will be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered.

### **CAB LIFT**

A hydraulic cab lift system will be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.

Lift controls will be located on the right side pump panel or front area of the body in a convenient location.

The cab will be capable of tilting 43 degrees to accommodate engine maintenance and removal.

The cab will be locked down by a 2-point normally closed spring loaded hook type latch that fully engages after the cab has been lowered. The system will be hydraulically actuated to release the normally closed locks when the cab lift control is in the raised position and cab lift system is under pressure. When the cab is completely lowered and system pressure has been relieved, the spring loaded latch mechanisms will return to the normally closed and locked position.

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The hydraulic cylinders will be equipped with a velocity fuse that protects the cab from accidentally descending when the control is located in the tilt position.

For increased safety, a redundant mechanical stay arm will be provided that must be manually put in place on the left side between the chassis and cab frame when the cab is in the raised position. This device will be manually stowed to its original position before the cab can be lowered.

### **Cab Lift Interlock**

The cab lift system will be interlocked to the parking brake. The cab tilt mechanism will be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism will be disabled.

### **GRILLE**

A bright finished aluminum mesh grille screen, inserted behind a bright finished grille surround, will be provided on the front center of the cab.

### **SIDE OF CAB MOLDING**

Chrome molding will be provided on both sides of cab.

### **MIRRORS**

A Retrac, dual vision, motorized, west coast style mirror, with chrome finish, will be mounted on each side of the front cab door with spring loaded retractable arms. The flat glass and convex glass will be heated and adjustable with remote control within reach of the driver.

An amber marker light will be provided on each mirror head.

### **DOORS**

To enhance entry and egress to the cab, the forward cab door openings will be a minimum of 37.50" wide x 63.37" high. The crew cab doors will be located on the sides of the cab and will be constructed in the same manner as the forward cab doors. The crew cab door openings will be a minimum of 34.30" wide x 73.25" high.

The forward cab and crew cab doors will be constructed of extruded aluminum with a nominal material thickness of 0.093". The exterior door skins will be constructed from 0.090" aluminum.

A customized, vertical, pull-down type door handle will be provided on the exterior of each cab door. The finish of the door handle will be chrome/black. The exterior handle will be designed specifically for the fire service to prevent accidental activation, and will provide 4.00" wide x 2.00" deep hand clearance for ease of use with heavy gloved hands.

Each door will also be provided with an interior flush, open style paddle handle that will be readily operable from fore and aft positions, and be designed to prevent accidental activation. The interior handles will provide 4.00" wide x 1.25" deep hand clearance for ease of use with heavy gloved hands.

The cab doors will be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The keys will be Model 751. The locks will be capable of activating when the doors

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are open or closed. The doors will remain locked if locks are activated when the doors are opened, then closed.

A full length, heavy duty, stainless steel, piano-type hinge with a 0.38" pin and 11 gauge leaf will be provided on all cab doors. There will be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

A chrome grab handle will be provided on the inside of each cab door for ease of entry.

A red webbed grab handle will be installed on the crew cab door stop strap. The grab handles will be securely mounted.

The bottom cab step at each cab door location will be located below the cab doors and will be exposed to the exterior of the cab.

### **Door Panels**

The inner cab door panels will be constructed out of brushed stainless steel.

### **ELECTRIC OPERATED CAB DOOR WINDOWS**

All four (4) cab doors will be equipped with electric operated windows with one (1) flush mounted automotive style switch on each door. The driver's door will have four (4) switches, one (1) to control each door window.

Each switch will allow intermittent or auto down operation for ease of use. Auto down operation will be actuated by holding the window down switch for approximately 1 second.

### **CAB STEPS**

A dual step will be provided below each cab and crew cab door. The steps will be designed with a grip pattern punched into bright aluminum treadplate material providing support, slip resistance, and drainage. The steps will be a bolt-in design to minimize repair costs should they need to be replaced. The forward cab steps will be a minimum 25.00" wide, and the crew cab steps will be 21.50" wide with a 7.00" minimum depth. The step design raises the middle step higher and closer to the cab floor, resulting in a 12.50" distance from the step to cab floor in the cab and a 10.25" distance from the step to cab floor in the crew cab. Stepping distances from the ground to first step will be approximately 14.00" and from first step to middle step will be approximately 12.00".

The vertical surface of the upper step well will be aluminum treadplate.

The first step will be lit by a white 12 volt DC LED light provided on the step.

### **CAB EXTERIOR HANDRAILS**

A 1.25" diameter slip-resistant, knurled aluminum handrail will be provided adjacent to each cab and crew cab door opening to assist during cab ingress and egress.

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### **STEP LIGHTS**

There will be six (6) white LED step lights with chrome housing installed for cab and crew cab access steps.

- One (1) light for the left side cab access steps.
- Two (2) lights for the left side crew cab access steps.
- Two (2) lights for the right side crew cab access steps.
- One (1) light for the right side cab access step.

In order to ensure exceptional illumination, each light will provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The lights will be activated when the battery switch is on and the adjacent door is opened.

### **FENDER CROWNS**

Stainless steel fender crowns will be installed at the cab wheel openings.

### **HANDRAILS BELOW CAB WINDSHIELD**

A 10.00" long x 1.25" diameter handrail will be mounted below the front cab windshield, one (1) on each side. The handrails will be extruded aluminum with a ribbed design to provide a positive gripping surface.

### **GRAB HANDLE(S)**

There will be two (2) chrome grab handle(s) mounted in the interior of the cab one (1) on the driver and one (1) on the officer side door pan vertical near the upper door panel hinged side, to work as a high grab handle into cab.. The grab handle(s) will be securely mounted.

### **CREW CAB WINDOWS**

One (1) fixed window with tinted glass will be provided on each side of the cab, to the rear of the front cab door. The windows will be sized to enhance light penetration into the cab interior. The windows will measure 18.70" wide x 23.75" high with chrome window trim.

### **WINDOW COATINGS**

All cab and crew cab windows will have solar window film applied. The solar film will block UV rays and excess heat while not impacting the visibility or clarity of the window.

### **CAB DASH**

The driver side dash, switch panel located to the right of the driver, and center console will be constructed of metal and painted to match the cab interior.

The officer side dash will be a flat top design with an upper beveled edge to provide easy maintenance and will be constructed out of aluminum and painted to match the cab interior.

The instrument gauge cluster will be surrounded with a high impact ABS plastic contoured to the same shape of the instrument gauge cluster.

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### **MOUNTING PLATE ON ENGINE TUNNEL**

Equipment installation provisions will be installed on the engine tunnel.

A 0.188" smooth aluminum plate will be bolted to the top surface of the engine tunnel. The plate will follow the contour of the engine tunnel and will run the entire length of the engine tunnel. The plate will be spaced off the engine tunnel 1.00" to allow for wire routing below the plate.

The mounting surface will be painted to match the cab interior.

### **CAB INTERIOR**

The cab interior will be constructed of primarily metal (painted aluminum) to withstand the severe duty cycles of the fire service.

The engine tunnel will be padded and covered, on the top and sides, with dark silver gray 36 ounce leather grain vinyl resistant to oil, grease, and mildew.

For durability and ease of maintenance, the cab interior side walls will be painted aluminum. The rear wall will be painted aluminum.

The headliner will be installed in both forward and rear cab sections. Headliner material will be vinyl. A sound barrier will be part of its composition. Material will be installed on an aluminum sheet and securely fastened to interior cab ceiling.

The forward portion of the cab headliner will permit easy access for service of electrical wiring or other maintenance needs.

All wiring will be placed in metal raceways.

### **CAB INTERIOR UPHOLSTERY**

The cab interior upholstery will be 36 oz dark silver gray vinyl.

### **CAB INTERIOR PAINT**

The cab interior metal surfaces, excluding the rear heater panels, will be painted fire smoke gray, vinyl texture paint.

The rear heater panels will be painted black, vinyl textured paint.

### **CAB FLOOR**

The cab and crew cab floor areas will be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler.

The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a 0.25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels.

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### **DEFROST/AIR CONDITIONING SYSTEM**

A ceiling mounted combination heater, defroster and air conditioning system will be installed in the cab above the engine tunnel area.

#### **Cab Defroster**

A 54,000 BTU heater-defroster unit with 690 SCFM of air flow will be provided inside the cab. The heater-defrost will be installed in the forward portion of the cab ceiling. Air outlets will be strategically located in the cab header extrusion per the following:

- One (1) adjustable will be directed towards the left side cab window
- One (1) adjustable will be directed towards the right side cab window
- Six (6) fixed outlets will be directed at the windshield

The defroster will be capable of clearing 98 percent of the windshield and side glass when tested under conditions where the cab has been cold soaked at 0 degrees Fahrenheit for 10 hours, and a 2 ounce per square inch layer of frost/ice has been able to build up on the exterior windshield. The defroster system will meet or exceed SAE J382 requirements.

#### **Cab/Crew Auxiliary Heater**

There will be one (1) 31,000 BTU auxiliary heater with 560 SCFM of air flow provided in each outboard rear facing seat riser with a dual scroll blower. An aluminum plenum incorporated into the cab structure to be used to transfer heat to the forward positions.

#### **Air Conditioning**

A 13.10 cubic inch compressor will be installed on the engine.

A roof-mounted condenser with a 78,000 BTU output at 2,400 SCFM that meets and exceeds the performance specification will be installed on the cab roof. Mounting the condenser below the cab or body would reduce the performance of the system and will not be acceptable. The condenser cover to be painted to match the cab roof.

The air conditioning system will be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 75 degrees Fahrenheit at 50 percent relative humidity within 30 minutes. The cooling performance test will be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours.

The evaporator unit will be installed in the rear portion of the cab ceiling over the engine tunnel. The evaporator will include one (1) high performance heating core, one (1) high performance cooling core with (1) plenum directed to the front and one (1) plenum directed to the rear of the cab. The rear plenum will be covered with a formed plastic cover.

The evaporator unit will have a 52,000 BTU at 690 SCFM rating that meets and exceeds the performance specifications.

Adjustable air outlets will be strategically located on the forward plenum cover per the following:

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- Four (4) will be directed towards the seating position on the left side of the cab
- Four (4) will be directed towards the seating position on the right side of the cab

Adjustable air outlets will be strategically located on the rear plenum cover per the following:

- Minimum of five (5) will be directed towards crew cab area

A high efficiency particulate air (HEPA) filter will be included for the system. Access to the filter cover will be secured with four (4) screws.

The air conditioner refrigerant will be R-134A and will be installed by a certified technician.

### **Climate Control**

An automotive style controller will be provided to control the heat and air conditioning system within the cab. The controller will have three (3) functional knobs for fan speed, temperature, and air flow distribution (front to rear) control.

The system will control the temperature of the cab and crew cab automatically by pushing the center of the fan speed control knob. Rotate the center temperature control knob to set the cab and crew cab temperature.

The AC system will be manually activated by pushing the center of the temperature control knob. Pushing the center of the air flow distribution knob will engage the AC for max defrost, setting the fan speeds to 100 percent and directing all air flow to the overhead forward position.

The system controller will be located within panel position #12.

### **Gravity Drain Tubes**

Two (2) condensate drain tubes will be provided for the air conditioning evaporator. The drip pan will have two (2) drain tubes plumbed separately to allow for the condensate to exit the drip pan. No pumps will be provided.

### **SUN VISORS**

Two (2) smoked Lexan™ sun visors will be provided. The sun visors will be located above the windshield with one (1) mounted on each side of the cab.

There will be a black plastic thumb latch provided to help secure each sun visor in the stowed position.

### **GRAB HANDLE**

A black rubber covered grab handle will be mounted on the door post of the driver and officer's side cab door to assist in entering the cab. The officer's side grab handle will be mounted on the lower portion of the door post. The grab handle will be securely mounted to the post area between the door and windshield.

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### **ENGINE COMPARTMENT LIGHTS**

There will be one (1) Whelen®, Model 3SC0CDCR, 12 volt DC, 3.00" white LED light(s) with Model 3FLANGEC, chrome flange kit(s) installed under the cab to be used as engine compartment illumination.

These light(s) will be activated automatically when the cab is raised or when the dip stick door is opened.

### **ACCESS TO ENGINE DIPSTICKS**

For access to the engine oil and transmission fluid dipsticks, there will be a door on the engine tunnel, inside the crew cab. The door will be on the rear wall of the engine tunnel, on the vertical surface.

The engine oil dipstick will allow for checking only. The transmission dipstick will allow for both checking and filling.

The door will have a rubber seal for thermal and acoustic insulation. One (1) flush lift and turn latch will be provided on the access door.

### **CAB SAFETY SYSTEM**

The cab will be provided with a safety system designed to protect occupants in the event of a side roll or frontal impact, and will include the following:

- A supplemental restraint system (SRS) sensor will be installed on a structural cab member behind the instrument panel. The SRS sensor will perform real time diagnostics of all critical subsystems and will record sensory inputs immediately before and during a side roll or frontal impact event.
- A slave SRS sensor will be installed in the cab to provide capacity for eight (8) crew cab seating positions.
- A fault-indicating light will be provided on the vehicle's instrument panel allowing the driver to monitor the operational status of the SRS system.
- A driver side front air bag will be mounted in the steering wheel and will be designed to protect the head and upper torso of the occupant, when used in combination with the 3-point seat belt.
- A passenger side knee bolster air bag will be mounted in the modesty panel below the dash panel and will be designed to protect the legs of the occupant, when used in combination with the 3-point seat belt.
- Air curtains will be provided in the outboard bolster of outboard seat backs to provide a cushion between occupant and the cab wall.
- Suspension seats will be provided with devices to retract them to the lowest travel position during a side roll or frontal impact event.
- Seat belts will be provided with pre-tensioners to remove slack from the seat belt during a side roll or frontal impact event.

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### **Frontal Impact Protection**

The SRS system will provide protection during a frontal or oblique impact event. The system will activate when the vehicle decelerates at a predetermined G force known to cause injury to the occupants. The cab and chassis will have been subjected, via third party test facility, to a crash impact during frontal and oblique impact testing. Testing included all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspensions components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body mounts. The testing provided configuration specific information used to optimize the timing for firing the safety restraint system. The sensor will activate the pyrotechnic devices when the correct crash algorithm, wave form, is detected.

The SRS system will deploy the following components in the event of a frontal or oblique impact event:

- Driver side front air bag
- Passenger side knee bolster air bag
- Air curtains mounted in the outboard bolster of outboard seat backs
- Suspension seats will be retracted to the lowest travel position
- Seat belts will be pre-tensioned to firmly hold the occupant in place

### **Side Roll Protection**

The SRS system will provide protection during a fast or slow 90 degree roll to the side, in which the vehicle comes to rest on its side. The system will analyze the vehicle's angle and rate of roll to determine the optimal activation of the advanced occupant restraints.

The SRS system will deploy the following components in the event of a side roll:

- Air curtains mounted in the outboard bolster of outboard seat backs
- Suspension seats will be retracted to the lowest travel position
- Seat belts will be pre-tensioned to firmly hold the occupant in place

### **SEATING CAPACITY**

The seating capacity of the vehicle (including tiller cab and belted seat positions in the rescue body) will be six (6).

### **DRIVER SEAT**

A seat will be provided in the cab for the driver. The seat design will be a cam action type, with air suspension. For increased convenience, the seat will include a manual control to adjust the horizontal position (6.00" travel). The manual horizontal control will be a towel-bar style located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat will have an adjustable reclining back. The seat back will be a high back style with side bolster pads for maximum support. For optimal comfort, the seat will be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat will include the following features incorporated into the side roll protection system:

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- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A suspension seat safety system will be included. When activated in the event of a side roll, this system will pretension the seat belt and retract the seat to its lowest travel position.

The seat will be furnished with a 3-point, shoulder type seat belt.

#### **OFFICER SEAT**

A seat will be provided in the cab for the passenger. The seat will be a fixed type, with no suspension. For optimal comfort, the seat will be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back will be an SCBA back style with 95 degree fixed recline angle. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt.

The seat will be furnished with a 3-point, shoulder type seat belt.

#### **RADIO COMPARTMENT**

A radio compartment will be provided under the officer's seat.

The inside compartment dimensions will be 14.00" wide x 7.50" high x 15.00" deep, with the back of the compartment angled up to match the cab structure.

A drop-down door with one (1) flush lift and turn latch will be provided for access.

The compartment will be constructed of smooth aluminum and painted to match the cab interior.

#### **REAR FACING DRIVER SIDE OUTBOARD SEAT**

There will be one (1) rear facing seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat will be provided with 15.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back will be an SCBA back style with 95 degree fixed recline angle. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

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- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt.

The seat will be furnished with a 3-point, shoulder type seat belt.

**REAR FACING PASSENGER SIDE OUTBOARD SEAT**

There will be one (1) rear facing seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat will be provided with 15.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back will be an SCBA back style with 95 degree fixed recline angle. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt.

The seat will be furnished with a 3-point, shoulder type seat belt.

**FORWARD FACING DRIVER SIDE OUTBOARD SEAT**

There will be one (1) forward facing, foldup seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat will be a minimum of 15.00" from the front of the cushion to the face of the seat back and designed with EVC (elastomeric vibration control).

The seat back will be an SCBA style with 90 degree back. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

The seat will be furnished with a 3-point, shoulder type seat belt.

**FORWARD FACING CENTER CABINET**

A forward facing cabinet will be provided in the crew cab at the center position.

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The cabinet will be 38.50" wide x 50.00" high x 28.00" deep with one (1) Amdor rollup door with anodized finish, locking with #751 key. The frame to frame opening of the cabinet will be 36.00" wide x 44.75" high. The minimum clear door opening will be 33.25" wide x 38.87" high.

The cabinet will include two (2) infinitely adjustable shelves with a 0.75" up-turned lip painted to match the cab interior.

The cabinet will include no louvers.

The cabinet will be constructed of smooth aluminum, and painted to match the cab interior.

### **Cabinet Light**

There will be one (1) white LED strip light installed on the left side of the interior cabinet door opening and one (1) white LED strip light installed on the right side of the interior cabinet door opening. The lighting will be controlled by an automatic door switch.

### **FORWARD FACING PASSENGER SIDE OUTBOARD SEAT**

There will be one (1) forward facing, foldup seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat will be a minimum of 15.00" from the front of the cushion to the face of the seat back and designed with EVC (elastomeric vibration control).

The seat back will be an SCBA style with 90 degree back. The SCBA cavity will be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity will be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat will include the following features incorporated into the side roll protection system:

- Side air curtain will be mounted integral to the outboard bolster of the seat back. The air curtain will be covered by a decorative panel when in the stowed position.
- A seat safety system will be included. When activated, this system will pretension the seat belt around the occupant to firmly hold them in place in the event of a side roll.

The seat will be furnished with a 3-point, shoulder type seat belt.

### **SEAT UPHOLSTERY**

All seat upholstery will be leather grain 36 oz dark silver gray vinyl resistant to oil, grease and mildew. The cab and tiller cab (if applicable) will have six (6) seating positions.

### **AIR BOTTLE HOLDERS**

All SCBA type seats in the cab will have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket will include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp will constrain the SCBA bottle in the seat and will exceed the NFPA standard of 9G.

There will be a quantity of five (5) SCBA brackets.

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### **SEAT BELTS**

All cab and tiller cab (if applicable) seating positions will have red seat belts. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length will meet or exceed the current edition of applicable NFPA and CAN/ULC - S515 standards.

The 3-point shoulder type seat belts will include height adjustment. This adjustment will optimize the belts effectiveness and comfort for the seated firefighter. The 3-point shoulder type seat belts will be furnished with dual automatic retractors that will provide ease of operation in the normal seating position.

The 3-point shoulder type belts will also include the ReadyReach® D-loop assembly to the shoulder belt system. The ReadyReach feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location.

Any flip up seats will include a 3-point shoulder type belts only.

To ensure safe operation, the seats will be equipped with seat belt sensors in the seat cushion and belt receptacle that will activate an alarm indicating a seat is occupied but not buckled.

### **HELMET STORAGE PROVIDED BY FIRE DEPARTMENT**

NFPA 1900, 2024 edition, section 11.1.8.4.1 and CAN/ULC 515:2024 edition, section 5.2, requires a location for helmet storage be provided.

There is no helmet storage on the apparatus as manufactured. The fire department will provide a location for storage of helmets.

### **CAB DOME LIGHTS**

There will be four (4) dual LED dome lights with black bezels provided. Two (2) lights will be mounted above the inside shoulder of the driver and officer and two (2) lights will be installed and located, one (1) on each side of the crew cab.

The color of the LED's will be red and white.

The white LED's will be controlled by the door switches and the lens switch.

The color LED's will be controlled by the lens switch.

All dome lights on the apparatus will be illuminated per the current edition of applicable NFPA standards per seating position.

### **ENHANCED SOFTWARE FOR CAB AND CREW CAB DOME LIGHTS**

The cab and crew cab dome lights will remain on for 10 seconds for improved visibility after the doors are closed.

The dome lights will dim after 10 seconds or immediately if the vehicle's transmission is put into gear.

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**PORTABLE HAND LIGHTS PROVIDED BY FIRE DEPARTMENT**

The hand lights are not on the apparatus as manufactured. The fire department will provide and mount these hand lights.

**CAB INSTRUMENTATION**

The cab instrument panel include gauges, an LCD display, telltale indicator lamps, control switches, alarms, and a diagnostic panel. The function of the instrument panel controls and switches will be identified by a label adjacent to each item. Actuation of the headlight switch will illuminate the labels in low light conditions. Telltale indicator lamps will not be illuminated unless necessary. The cab instruments and controls will be conveniently located within the forward cab section, forward of the driver. The gauge assembly and switch panels are designed to be removable for ease of service and low cost of ownership.

**Gauges**

The gauge panel will include the following ten (10) black faced gauges with black bezels to monitor vehicle performance:

- Voltmeter gauge (volts):
  - Low volts (11.8 VDC)
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
  - High volts (15.5 VDC)
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
  - Very low volts (11.3 VDC)
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
  - Very high volts (16.0 VDC)
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
- Engine Tachometer (RPM)
- Speedometer MPH (Major Scale), KM/H (Minor Scale)
- Fuel level gauge (Empty - Full in fractions):
  - Low fuel (1/8 full)
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
  - Very low fuel (1/32 full)
    - Red caution indicator on the information center with steady alarm
    - Amber caution light on gauge assembly
- Engine Oil pressure Gauge (PSI):
  - Low oil pressure to activate engine warning lights and alarms
    - Red caution indicator on the information center with steady alarm
    - Amber caution light on gauge assembly

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- Front Air Pressure Gauges (PSI):
  - Low air pressure to activate warning lights and alarm
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
- Rear Air Pressure Gauges (PSI):
  - Low air pressure to activate warning lights and alarm
    - Red warning indicator on the information center with a steady alarm
    - Amber caution light on gauge assembly
- Transmission Oil Temperature Gauge (Fahrenheit):
  - High transmission oil temperature activates warning lights and alarm
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
- Engine Coolant Temperature Gauge (Fahrenheit):
  - High engine temperature activates an engine warning light and alarms
    - Amber caution indicator on the information center with intermittent alarm
    - Amber caution light on gauge assembly
- Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions):
  - Low fluid (1/8 full)
    - Amber indicator light in gauge dial

All gauges will perform prove out at initial power-up to ensure proper performance.

### **Indicator Lamps**

To promote safety, the following telltale indicator lamps will be located on the instrument panel in clear view of the driver. The indicator lamps will be "dead-front" design that is only visible when active. The colored indicator lights will have descriptive text or symbols.

The following amber telltale lamps will be present:

- Low coolant
- Trac cntl (traction control) (where applicable)
- Check engine
- Check trans (check transmission)
- Aux brake overheat (Auxiliary brake overheat)
- Air rest (air restriction)
- Caution (triangle symbol)
- Water in fuel
- DPF (engine diesel particulate filter regeneration)
- Trailer ABS (where applicable)
- Wait to start (where applicable)
- HET (engine high exhaust temperature) (where applicable)
- ABS (antilock brake system)
- MIL (engine emissions system malfunction indicator lamp) (where applicable)

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- Side roll fault (where applicable)
- Front air bag fault (where applicable)

The following red telltale lamps will be present:

- Warning (stop sign symbol)
- Seat belt
- Parking brake
- Stop engine
- Rack down

The following green telltale lamps will be provided:

- Left turn
- Right turn
- Battery on

The following blue telltale lamp will be provided:

- High beam

### **Alarms**

**Audible steady tone warning alarm:** A steady audible tone alarm will be provided whenever a warning message is present.

**Audible pulsing tone caution alarm:** A pulsing audible tone alarm (chime/chirp) will be provided whenever a caution message is present without a warning message being present.

**Alarm silence:** Any active audible alarm will be able to be silenced by holding the ignition switch at the top position for three (3) to five (5) seconds. For improved safety, silenced audible alarms will intermittently chirp every 30 seconds until the alarm condition no longer exists. The intermittent chirp will act as a reminder to the operator that a caution or warning condition still exists. Any new warning or caution condition will enable the steady or pulsing tones respectively.

### **Indicator Lamp and Alarm Prove-Out**

A system will be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms will perform prove-out at initial power-up to ensure proper performance.

### **Control Switches**

For ease of use, the following controls will be provided immediately adjacent to the cab instrument panel within easy reach of the driver. All switches will have backlit labels for low light applications.

**Headlight/Parking light switch:** A three (3)-position maintained rocker switch will be provided. The first switch position will deactivate all parking and headlights. The second switch position will activate the parking lights. The third switch will activate the headlights.

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Panel back lighting intensity control switch: A three (3)-position momentary rocker switch will be provided. Pressing the top half of the switch, "Panel Up" increases the panel back lighting intensity and pressing the bottom half of the switch, "Panel Down" decreases the panel back lighting intensity. Pressing the half or bottom half of the switch several times will allow back lighting intensity to be gradually varied from minimum to maximum intensity level for ease of use.

Ignition switch: A three (3)-position maintained/momentary rocker switch will be provided. The first switch position will turn off and deactivate vehicle ignition. The second switch position will activate vehicle ignition and will perform prove-out on the telltale indicators and alarms for 3 to 5 seconds after the switch is turned on. A green indicator lamp is activated with vehicle ignition. The third momentary position will temporarily silence all active cab alarms. An alarm "chirp" may continue as long as alarm condition exists. Switching ignition to off position will terminate the alarm silence feature and reset function of cab alarm system.

Engine start switch: A two (2)-position momentary rocker switch will be provided. The first switch position is the default switch position. The second switch position will activate the vehicle's engine. The switch actuator is designed to prevent accidental activation.

Hazard switch will be provided on the instrument panel or on the steering column.

Heater, defroster, and air conditioning control panel.

Turn signal arm: A self-canceling turn signal with high beam headlight controls will be provided.

Windshield wiper control will have high, low and intermittent modes.

Parking brake control: An air actuated push/pull park brake control valve will be provided.

Chassis horn control: Activation of the chassis horn control will be provided through the center of the steering wheel.

High idle engagement switch: A momentary rocker switch with integral indicator lamp will be provided. The switch will activate and deactivate the high idle function. The "OK To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch will indicate when the high idle function is engaged.

"OK To Engage High Idle" indicator lamp: A green indicator light will be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.

Emergency switching will be controlled by multiple individual warning light switches for various groups or areas of emergency warning lights. An Emergency Master switch provided on the instrument panel that enables or disables all individual warning light switches is included.

An additional "Emergency Master" button will be provided on the lower left hand corner of the gauge panel to allow convenient control of the "Emergency Master" system from inside the driver's door when standing on the ground.

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### **Custom Switch Panels**

The design of cab instrumentation will allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There will be positions for up to four (4) switch panels in the lower instrument console and up to six (6) switch panels in the overhead visor console. All switches have backlit labels for low light conditions.

### **Diagnostic Panel**

A diagnostic panel will be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel will allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches will allow ABS systems to provide blink codes should a problem exist.

The diagnostic panel will include the following:

- Engine diagnostic port
- Transmission diagnostic port
- ABS diagnostic port
- Roll sensor diagnostic port
- Command Zone USB diagnostic port
- ABS diagnostic switch (blink codes flashed on ABS telltale indicator)
- Diesel particulate filter regeneration switch (where applicable)
- Diesel particulate filter regeneration inhibit switch (where applicable)

### **Cab LCD Display**

A digital four (4)-row by 20-character dot matrix display will be integral to the gauge panel. The display will be capable of showing simple graphical images as well as text. The display will be split into three (3) sections. Each section will have a dedicated function. The upper left section will display the outside ambient temperature.

The upper right section will display the following, along with other configuration specific information:

- Odometer
- Trip mileage
- PTO hours
- Fuel consumption
- Engine hours

The bottom section will display INFO, CAUTION, and WARNING messages. Text messages will automatically activate to describe the cause of an audible caution or warning alarm. The LCD will be capable of displaying multiple text messages should more than one caution or warning condition exist.

### **AIR RESTRICTION INDICATOR**

A high air restriction warning indicator light LCD message with amber warning indicator and audible alarm will be provided.

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**"DO NOT MOVE APPARATUS" INDICATOR**

A flashing red indicator light, located in the driving compartment, will be illuminated automatically per the current NFPA requirements. The light will be labeled "Do Not Move Apparatus If Light Is On."

The same circuit that activates the Do Not Move Apparatus indicator will activate a pulsing alarm when the parking brake is released.

**DO NOT MOVE TRUCK MESSAGES**

Messages will be displayed on the Command Zone™, color display located within sight of the driver whenever the Do Not Move Truck light is active. The messages will designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).

The following messages will be displayed (where applicable):

- Do Not Move Truck
- DS Cab Door Open (Driver Side Cab Door Open)
- PS Cab Door Open (Passenger's Side Cab Door Open)
- DS Crew Cab Door Open (Driver Side Crew Cab Door Open)
- PS Crew Cab Door Open (Passenger's Side Crew Cab Door Open)
- DS Body Door Open (Driver Side Body Door Open)
- PS Body Door Open (Passenger's Side Body Door Open)
- Rear Body Door Open
- DS Ladder Rack Down (Driver Side Ladder Rack Down)
- PS Ladder Rack Down (Passenger Side Ladder Rack Down)
- Deck Gun Not Stowed
- Lt Tower Not Stowed (Light Tower Not Stowed)
- Fold Tank Not Stowed (Fold-A-Tank Not Stowed)
- Aerial Not Stowed (Aerial Device Not Stowed)
- Stabilizer Not Stowed
- Steps Not Stowed
- Handrail Not Stowed

Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved will be displayed as a caution message after the parking brake is disengaged.

**SWITCH PANELS**

The built-in switch panels will be located in the lower console or overhead console of the cab.

The switches will be rocker-type and include an integral indicator light. For quick, visual indication the switch will be illuminated whenever the switch is active. A 2-ply, scratch resistant laser engraved Gravoply label indicating the use of each switch will be placed below the switches. The label will allow light to pass through the letters for improved visibility in low light conditions. Switches and light source are integral to the switch panel assembly.

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### **WIPER CONTROL**

Wiper control will consist of a two (2)-speed windshield wiper control with intermittent feature and windshield washer controls. The control will be located in the left hand pod of the steering wheel.

### **HOURLY METER - AERIAL DEVICE**

The following aerial hour meter messages will be included in the information centers:

- Aerial Hours, that keeps track of the time the aerial device is in motion.
- Aerial PTO Hours, that keeps track of the time the aerial master switch is on and the aerial PTO is engaged.

### **AERIAL MASTER**

There will be a master switch for the aerial operating electrical system provided.

### **AERIAL PTO SWITCH**

A PTO switch for the aerial with indicator light will be provided.

### **CAB USB**

There will be four (4) USB terminations with a combination USB type A & C, wired to battery direct power, and provided per the following:

- One (1) within reach of the driver
- One (1) within reach of the passenger
- Two (2) on the rear of the engine tunnel, one (1) each side.

Battery direct loads cannot be load managed.

### **SPARE CIRCUIT**

There will be one (1) pair of wires, including a positive and a negative, installed on the apparatus.

The wires will have the following features:

- The positive wire will be connected directly to the battery power.
- The negative wire will be connected to ground.
- Wires will be capable of carrying 20 amps.
- Power and ground will terminate behind officer seat.
- Termination will be to a Blue Sea System, Model 5025, 6 circuit with negative bus bar. The terminal block will include a cover with circuit labels.

Wires will be protected to meet the NFPA Automotive Fire Apparatus standard.

Battery direct loads cannot be Load Managed

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### **INFORMATION CENTER**

An information center employing a 7.00" diagonal touch screen color LCD display will be encased in an ABS plastic housing.

The information center will have the following specifications:

- Operate in temperatures from -40 to 158 degrees Fahrenheit
- LCD optically bonded to hardened AR glass lens
- Five weather resistant user interface switches
- Grey with black accents
- Sunlight Readable
- Linux operating system
- Minimum of 1000nits rated display
- Display can be changed to an available foreign language
- A LCD display integral to the cab gauge panel will be included as outlined in the cab instrumentation area.
- Programmed to read US Customary

### **General Screen Design**

Where possible, background colors will be used to provide "At a Glance" vehicle information. If information provided on a screen is within acceptable limits, a green background will be used.

If a caution or warning situation arises the following will occur:

- An amber background/text color will indicate a caution condition
- A red background/text color will indicate a warning condition
- The information center will utilize an "Alert Center" to display text messages for audible alarm tones. The text messages will be written to identify the item(s) causing the audible alarm to sound. If more than one (1) text message occurs, the messages will cycle every second until the problem(s) have been resolved. The background color for the "Alert Center" will change to indicate the severity of the "warning" message. If a warning and a caution condition occur simultaneously, the red background color will be shown for all alert center messages.
- A label for each button will exist. The label will indicate the function for each active button for each screen. Buttons that are not utilized on specific screens will have a button label with no text or symbol.

### **Home/Transit Screen**

This screen will display the following:

- Vehicle Mitigation (if equipped)
- Water Level (if the water level system includes compatible communications to the information center)
- Foam Level (if the foam level system includes compatible communications to the information center)

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- Seat Belt Monitoring Screen
- Tire Pressure Monitoring (if equipped)
- Digital Speedometer
- Active Alarms

### **On Scene Screen**

This screen will display the following and will be auto activated with pump engaged (if equipped):

- Battery Voltage
- Fuel
- Oil Pressure
- Coolant Temperature
- RPM
- Water Level (if equipped)
- Foam Level (if equipped)
- Foam Concentration (if equipped)
- Water Flow Rate (if equipped)
- Water Used (if equipped)
- Active Alarms

### **Virtual Buttons**

There will be four (4) virtual switch panel screens that match the overhead and lower lighting and HVAC switch panels.

### **Page Screen**

The page screen will display the following and allow the user to progress into other screens for further functionality:

- Diagnostics
  - Faults
    - Listed by order of occurrence
    - Allows to sort by system
  - Interlock
    - Throttle Interlocks
    - Pump Interlocks (if equipped)
    - Aerial Interlocks (if equipped)
    - PTO Interlocks (if equipped)
  - Load Manager
    - A list of items to be load managed will be provided. The list will provide a description of the load.
    - The lower the priority numbers the earlier the device will be shed should a low voltage condition occur.
    - The screen will indicate if a load has been shed (disabled) or not shed.

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- "At a glance" color features are utilized on this screen.
- Systems
  - Command Zone
    - Module type and ID number
    - Module Version
    - Input or output number
    - Circuit number connected to that input or output
    - Status of the input or output
    - Power and Constant Current module diagnostic information
  - Foam (if equipped)
  - Pressure Controller (if equipped)
  - Generator Frequency (if equipped)
- Live Data
  - General Truck Data
- Maintenance
  - Engine oil and filter
  - Transmission oil and filter
  - Pump oil (if equipped)
  - Foam (if equipped)
  - Aerial (if equipped)
- Setup
  - Clock Setup
  - Date & Time
    - 12 or 24 hour format
    - Set time and date
  - Backlight
    - Daytime
    - Night time
    - Sensitivity
  - Unit Selection
  - Home Screen
  - Virtual Button Setup
  - On Scene Screen Setup
  - Configure Video Mode
    - Set Video Contrast
    - Set Video Color
    - Set Video Tint
- Do Not Move
  - The screen will indicate the approximate location and type of item that is open or is not stowed for travel. The actual status of the following devices will be indicated
    - Driver Side Cab Door
    - Passenger's Side Cab Door

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- Driver Side Crew Cab Door
- Passenger's Side Crew Cab Door
- Driver Side Body Doors
- Passenger's Side Body Doors
- Rear Body Door(s)
- Ladder Rack (if applicable)
- Deck Gun (if applicable)
- Light Tower (if applicable)
- Hatch Door (if applicable)
- Stabilizers (if applicable)
- Steps (if applicable)
- Notifications
  - View Active Alarms
    - Shows a list of all active alarms including date and time of the occurrence is shown with each alarm
    - Silence Alarms - All alarms are silenced
- Timer Screen
- HVAC (if equipped)
- Tire Information (if equipped)
- Ascendant Set Up Confirmation (if equipped)

Button functions and button labels may change with each screen.

### **COLLISION MITIGATION**

There will be a HAAS Alert®, Model HA7 Responder-to-Vehicle (R2V) collision avoidance system provided on the apparatus. The HA7 cellular transponder module will be installed behind the cab windshield, as high and near to the center as practical, to allow clear visibility to the sky. The module dimensions are 5.40" long x 2.70" wide x 1.30" high, and operating temperature range is -40 degrees Celsius to 85 degrees Celsius.

The transponder will be connected to the vehicle's emergency master circuit and battery direct power and ground.

While responding with emergency lights on, the HA7 transponder sends alert messages via cellular network to motorists in the vicinity of the responding truck that are equipped with the WAZE app.

While on scene with emergency lights on, the HA7 transponder sends road hazard alerts to motorists in the vicinity of the truck that are equipped with the WAZE app.

The HA7 Responder-to-Vehicle (R2V) collision avoidance system will include the transponder and a 5 year cellular plan subscription.

Activation of the HAAS Alert system requires a representative of the customer to accept the End User License Agreement (EULA) via an on-line portal.

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### **VEHICLE DATA RECORDER**

There will be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided.

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A USB cable can be used to connect the VDR to a laptop to retrieve required information. The program to download the information from the VDR will be available to download on-line.

The vehicle data recorder will be capable of recording the following data via hardwired and/or CAN inputs:

- Vehicle Speed - MPH
- Acceleration - MPH/sec
- Deceleration - MPH/sec
- Engine Speed - RPM
- Engine Throttle Position - % of Full Throttle
- ABS Event - On/Off
- Seat Occupied Status - Yes/No by Position
- Seat Belt Buckled Status - Yes/No by Position
- Master Optical Warning Device Switch - On/Off
- Internal clock syncs the time and date when a laptop is connected.

### **Seat Belt Monitoring System**

A seat belt monitoring system (SBMS) will be provided on the Command Zone™ color display. The SBMS will be capable of monitoring up to 10 seating positions indicating the status of each seat position per the following:

- Seat Occupied & Buckled = Green LED indicator illuminated
- Seat Occupied & Unbuckled = Red LED indicator with audible alarm
- No Occupant & Buckled = Red LED indicator with audible alarm
- No Occupant & Unbuckled = No indicator and no alarm
- FAULT = Blue LED indicator illuminated

The seat belt monitoring screen will become active on the Command Zone color display when:

- The home screen is active:
  - and there is any occupant seated but not buckled or any belt buckled with an occupant.
  - and there are no other Do Not Move Apparatus conditions present. As soon as all Do Not Move Apparatus conditions are cleared, the SBMS will be activated.

The SBMS will include an audible alarm that will warn that an unbuckled occupant condition exists and the parking brake is released, or the transmission is not in park.

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### **RADIO ANTENNA MOUNT**

There will be two (2) standard 1.125", 18 thread antenna-mounting base(s) installed one (1) on the left side and one (1) on the right side on the cab roof with high efficiency, low loss, coaxial cable(s) routed to the instrument panel area. A weatherproof cap will be installed on the mount.

### **VEHICLE CAMERA SYSTEM**

There will be a color vehicle camera system provided with the following:

- One (1) Standard Definition (SD) camera located at the rear of the apparatus, pointing rearward, displayed automatically with the vehicle in reverse.

The camera images will be displayed on the left side vehicle information center display. Audio from the microphone on the rear camera will be not provided.

The following components will be included:

- One (1) SV-CW134639CAI Camera
- All necessary cables

### **Camera Switcher**

A camera switcher is not required.

### **ELECTRICAL POWER CONTROL SYSTEM**

The primary power distribution will be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers will be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers will be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers will be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays will be easily accessible.

Distribution centers located throughout the vehicle will contain battery powered studs for supplying customer installed equipment thus providing a lower cost of ownership.

Circuit protection devices, which conform to SAE standards, will be utilized to protect electrical circuits. All circuit protection devices will be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers will be Type-I automatic reset (continuously resetting). When required, automotive type fuses will be utilized to protect electronic equipment. Control relays and solenoid will have a direct current rating of 125 percent of the maximum current for which the circuit is protected per NFPA.

### **Solid-State Control System**

A solid-state electronics based control system will be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network will consist of electronic modules, electronic control modules to include a see through housing, a power indicator, a status

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indicator and circuit indicators located near their point of use to reduce harness lengths and improve reliability. The control system will comply with SAE J1939-11 recommended practices.

The control system will operate as a master-slave system whereas the main control module instructs all other system components. The system will contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system will utilize a Real Time Operating System (RTOS) fully compliant with OSEK/VDX™ specifications providing a lower cost of ownership.

For increased reliability and simplified use the control system modules will include the following attributes:

- Green LED indicator light for module power
- Red LED indicator light for network communication stability status
- Control system self test at activation and continually throughout vehicle operation
- No moving parts due to transistor logic
- Software logic control for NFPA mandated safety interlocks and indicators
- Integrated electrical system load management without additional components
- Integrated electrical load sequencing system without additional components
- Customized control software to the vehicle's configuration
- Factory and field programmable to accommodate changes to the vehicle's operating parameters

To assure long life and operation in a broad range of environmental conditions, the solid-state control system modules will meet the following specifications:

- Module circuit board will meet SAE J771 specifications
- Operating temperature from -40 degrees Celsius to +70 degrees Celsius (-40 degrees Fahrenheit to +158 degrees Fahrenheit)
- Storage temperature from -40 degrees Celsius to +70 degrees Celsius (-40 degrees Fahrenheit to +158 degrees Fahrenheit)
- Vibration to 50g
- IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and one (1) meter)
- Operating voltage from eight (8) volts to 32 volts DC

The main controller will activate status indicators and audible alarms designed to provide warning of problems before they become critical.

### **Circuit Protection and Control Diagram**

Copies of all job-specific, computer network input and output (I/O) connections will be provided with each chassis. The sheets will indicate the function of each module connection point, circuit protection information (where applicable), wire numbers, wire colors and load management information.

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### **On-Board Electrical System Diagnostics**

The on-board information center will include the following diagnostic information:

- Text description of active warning or caution alarms
- Simplified warning indicators
- Amber caution indication with intermittent alarm
- Red warning indication with steady tone alarm

Advanced diagnostic feature will be provided in this control system. From the Command Zone display or connected wireless device, these features allow the user to monitor the real-time status of every input or output on the vehicle. It also allows users logged in as an administrator to force on inputs or outputs to assist the troubleshooting process.

### **TCU Module with WiFi**

An in cab module will provide WiFi wireless interface and data logging capability. The WiFi interface will comply with IEEE 802.11 b/g/n capabilities while communicating at 2.4 Gigahertz. The module will communicate through a black WiFi antenna allowing a line of site communication range of up to 300 feet with a roof mounted antenna.

The module will transmit a password protected web page to a WiFi enabled device (i.e. most smart phones, tablets or laptops) allowing two levels of user interaction. The firefighter level will allow vehicle monitoring of the vehicle and firefighting systems on the apparatus. The technician level will allow diagnostic access to inputs and outputs installed on the Command Zone™, control and information system.

The TCU capability will record faults from the engine, transmission, ABS and Command Zone™, control and information systems as they occur. No other data will be recorded at the time the fault occurs. The data TCU will provide up to 2 Gigabytes of data storage.

The TCU will provide a means to download the TCU information and update software in the device.

### **Indicator Light and Alarm Prove-Out System**

A system will be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

### **Voltage Monitor System**

A voltage monitoring system will be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system will provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm will activate if the system falls below 11.8 volts DC for more than two (2) minutes.

### **Dedicated Radio Equipment Connection Points**

There will be three (3) studs provided in the primary power distribution center located in front of the officer for two-way radio equipment. The studs will consist of the following:

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- 12-volt 40-amp battery switched power
- 12-volt 60-amp ignition switched power
- 12-volt 60-amp direct battery power

There will also be a 12-volt 100-amp ground stud located in or adjacent to the power distribution center.

### **EMI/RFI Protection**

To prevent erroneous signals from crosstalk contamination and interference, the electrical system will meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system will be used to ensure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus will have the ability to operate in the electromagnetic environment typically found in fire ground operations to ensure clean operations. The electrical system will meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, will provide EMC testing reports from testing conducted on an entire apparatus and will certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10KHz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

EMI/RFI susceptibility will be controlled by applying appropriate circuit designs and shielding. The electrical system will be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing will be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

### **ELECTRICAL SYSTEM PROGNOSTICS**

There will be a software based vehicle tool provided to predict remaining life of the vehicles critical fluid and events.

The system will send automatic indications to the Command Zone™ information center and/or wireless enabled devices to proactively alert of upcoming service intervals.

Prognostics will include the following:

- Engine oil and filter
- Transmission oil and filter

### **TELEMATICS SYSTEM**

Your vehicle will include a cellular-based vehicle telematics system including a telematic control unit with external cellular Wi-Fi and GPS antenna. Pierce will provide access to a web-based user interface portal that will allow users to access vehicle data collected as part of the system, allow users to configure monitoring tools, provide a global view of the location of each vehicle that has the system,

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provide a summary of fleet data, etc. The web-based user interface portal or certain features thereof may be provided on a subscription basis.

The telematic control unit will be fully integrated into the electrical system of the vehicle, will monitor the vehicle through the CAN data bus, and will transmit data through a secure AT&T 4G LTE cellular connection, and be provided with a 3 year subscription.

The web-based user interface portal will provide, among other features:

- User defined interval notifications
- User defined fault alerts
- Remote access to Command Zone™ diagnostics
- Vehicle analytics and activity monitoring
- Vehicle system status

The system is activated while building your vehicle and thereafter remains active for a 60-day grace period starting when your vehicle ships from the factory. This means that the system is active at the time of factory acceptance and during the 60-day grace period. By selecting this option, it is agreed that use of the system and the web-based user interface portal will be subject to the terms set forth in the Data Systems Agreement referenced at <https://www.piercemfg.com/privacy-statement>. Customers will be provided with an initial login at the time of factory acceptance to verify performance of the system and the web-based user interface portal. The term of the subscription, if any, will begin when the vehicle ships from the factory. If customers do not log into the web-based user interface portal and confirm acceptance of the terms before the 60-day grace period ends, the system will be deactivated, and no new data will be collected or retained Pierce. Reactivation can be coordinated through the customer's authorized Pierce Dealer.

### **ELECTRICAL**

All 12-volt electrical equipment installed by the apparatus manufacturer will conform to modern automotive practices. All wiring will be high temperature crosslink type. Wiring will be run, in loom or conduit, where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers will be provided which conform to SAE Standards. Wiring will be color, function and number coded. Function and number codes will be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors will be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

Electrical wiring and equipment will be installed utilizing the following guidelines:

1. All holes made in the roof will be caulked with silicon. Large fender washers, liberally caulked, will be used when fastening equipment to the underside of the cab roof.
2. Any electrical component that is installed in an exposed area will be mounted in a manner that will not allow moisture to accumulate in it. Exposed area will be defined as any location outside of the cab or body.

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3. Electrical components designed to be removed for maintenance will not be fastened with nuts and bolts. Metal screws will be used in mounting these devices. Also a coil of wire will be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.
4. Corrosion preventative compound will be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections will require this compound in the plug to prevent corrosion and for easy separation (of the plug).
5. All lights that have their sockets in a weather exposed area will have corrosion preventative compound added to the socket terminal area.
6. All electrical terminals in exposed areas will have silicon applied completely over the metal portion of the terminal.

All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, will be furnished. Rear identification lights will be recessed mounted for protection. Lights and wiring mounted in the rear bulkheads will be protected from damage by installing a false bulkhead inside the rear compartments.

An operational test will be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

The results of the tests will be recorded and provided to the purchaser at time of delivery.

#### **BATTERY SYSTEM**

There will be four (4) 12 volt Stryten/Exide®, Model 31S950X5W, batteries that include the following features will be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Group 31
- Rating of 3800 CCA at 0 degrees Fahrenheit
- 760 minutes of reserve capacity
- Threaded stainless steel studs

Each battery case will be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover will be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery will consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

#### **BATTERY SYSTEM**

There will be a single starting system with an ignition switch and starter button provided and located on the cab instrument panel.

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### **MASTER BATTERY SWITCH**

There will be a master battery switch provided within the cab within easy reach of the driver to activate the battery system.

An indicator light will be provided on the instrument panel to notify the driver of the status of the battery system.

### **BATTERY COMPARTMENTS**

Batteries will be placed on non-corrosive mats and be stored in well ventilated compartments located under the cab and bolted directly to the chassis frame. The battery boxes will have reinforced sides. The battery compartments will be constructed of 0.188" steel plate and be designed to accommodate a maximum of three (3) group 31 batteries in each compartment. The battery hold-downs will be of a non-corrosive material. All bolts and nuts will be stainless steel.

Heavy-duty, 2/0 gauge, color coded battery cables will be provided. Battery terminal connections will be coated with anti-corrosion compound.

Battery solenoid terminal connections will be encapsulated with semi-permanent rubberized compound.

### **JUMPER STUDS**

One (1) set of battery jumper studs with plastic color-coded covers will be included on the battery compartments.

### **BATTERY CHARGER**

There will be a Kussmaul™, Chief Series Smart Charger 6012, product code 091-266-12-60, 60 amp battery charger with build-in touch screen display provided.

The battery charger will be wired to the AC shoreline inlet through a junction box located near the battery charger.

The battery charger will be located in the cab behind the driver seat.

### **REMOTE CONTROL PANEL - BATTERY CHARGER**

There will be a Kussmaul™, Model 091-94-12 universal display panel included. It will be wired directly to the chassis batteries.

The battery charger indicator will be located on the driver's seat riser.

### **AUTO EJECT FOR SHORELINE**

There will be one (1) Kussmaul™, Model 091-55-20-120, 20 amp 120 volt AC shoreline inlet(s) provided to operate the dedicated 120 volt AC circuits on the apparatus.

The shoreline inlet(s) will include red weatherproof flip up cover(s).

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There will be a release solenoid wired to the vehicle's starter to eject the AC connector when the engine is starting.

The shoreline(s) will be connected to the battery charger.

There will be a mating connector body supplied with the loose equipment.

There will be a label installed near the inlet(s) that state the following:

- Line Voltage
- Current Rating (amps)
- Phase
- Frequency

The shoreline receptacle will be located on the driver side of cab, to the front of cab door.

### **ALTERNATOR**

There will be a Leece-Neville, Model BLP4003, alternator provided. It will have a rated output current of 420 amp as measured by SAE method J56. The alternator will feature an integral, self diagnostic regulator and rectifier. The alternator will be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

### **ELECTRONIC LOAD MANAGER**

An electronic load management (ELM) system will be provided that monitors the vehicles 12-volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.

For improved reliability and ease of use, the load manager system will be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components will not be allowed.

The system will include the following features:

- System voltage monitoring.
- A shed load will remain inactive for a minimum of five minutes to prevent the load from cycling on and off.
- Sixteen available electronic load shedding levels.
- Priority levels can be set for individual outputs.
- High Idle to activate before any electric loads are shed and deactivate with the service brake.
  - If enabled:
    - "Load Man Hi-Idle On" will display on the information center.
    - Hi-Idle will not activate until 30 seconds after engine start up.
- Individual switch "on" indicator to flash when the particular load has been shed.
- The information center indicates system voltage.

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The information center, where applicable, includes a "Load Manager" screen indicating the following:

- Load managed items list, with priority levels and item condition.
- Individual load managed item condition:
  - ON = not shed
  - SHED = shed

### **SEQUENCER**

A sequencer will be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation will allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

For improved reliability and ease of use, the load sequencing system will be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components will not be allowed.

Emergency light sequencing will operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights will be activated one by one at half-second intervals. Sequenced emergency light switch indicators will flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer will deactivate the warning light loads in the reverse order.

Sequencing of the following items will also occur, in conjunction with the ignition switch, at half-second intervals:

- Cab Heater and Air Conditioning
- Crew Cab Heater (if applicable)
- Crew Cab Air Conditioning (if applicable)
- Exhaust Fans (if applicable)
- Third Evaporator (if applicable)

### **HEADLIGHTS**

There will be four (4) JW Speaker®, Model 8800, 4" x 6" rectangular LED lights with heated lens mounted in the front quad style, chrome housing on each side of the cab grille:

- the outside light on each side will contain a part number 055\*\*\*1 low beam module
- the inside light on each side will contain a part number 055\*\*\*1 high beam module
- the headlights to include chrome bezels

The low beam lights will be activated when the headlight switch is on.

The high beam and low beam lights will be activated when the headlight switch and the high beam switch is activated.

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**DIRECTIONAL LIGHTS**

There will be two (2) Whelen 600 series, LED combination directional/marker lights provided. The lights will be located on the outside cab corners, next to the headlights.

The color of the lenses will be clear.

**INTERMEDIATE LIGHT**

There will be two (2) Weldon, Model 9186-8580-29, amber LED turn signal marker lights furnished, one (1) each side, in the rear fender panel. The light will double as a turn signal and marker light.

**CAB CLEARANCE/MARKER/ID LIGHTS**

There will be five (5) Truck-Lite, Model 35375Y, amber LED lights provided to indicate the presence and overall width of the vehicle in the following locations:

- Three (3) amber LED identification lights will be installed in the center of the cab above the windshield.
- Two (2) amber LED clearance lights will be installed, one (1) on each outboard side of the cab above the windshield.

The lights will be mounted with an aluminum guard.

**FRONT CAB SIDE DIRECTIONAL/MARKER LIGHTS**

There will be two (2) Truck-Lite®, Model 19036Y, amber LED lights installed to the outside of the chrome wrap around bezel, one (1) on each side of the cab.

The lights will activate as marker lights with the headlight switch and directional lights with the corresponding directional circuit.

**REAR CLEARANCE/MARKER/ID LIGHTING**

There will be three (3) Truck-Lite®, Model 35200R, LED lights used as identification lights located at the rear of the apparatus per the following:

- As close as practical to the vertical centerline
- Centers spaced not less than 6.00" or more than 12.00" apart
- Red in color
- All at the same height

There will be two (2) Truck-Lite, Model 35200R, LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following:

- To indicate the overall width of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the rear
- All at the same height

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There will be two (2) Truck-Lite, Model 35200R, LED lights installed on the side of the apparatus as marker lights as close to the rear as practical per the following:

- To indicate the overall length of the vehicle
- One (1) each side of the vertical centerline
- As near the top as practical
- Red in color
- To be visible from the side
- All at the same height

There will be two (2) red reflectors located on the rear of the truck facing to the rear. One (1) each side, as far to the outside as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

There will be two (2) red reflectors located on the side of the truck facing to the side. One (1) each side, as far to the rear as practical, at a minimum of 15.00", but no more than 60.00", above the ground.

Per FMVSS 108 and CMVSS 108 requirements.

#### **MARKER LIGHTS**

There will be one (1) pair of amber and red LED marker lights with rubber arm, located at the rear most lower corner of the body. The amber lens will face the front and the red lens will face the rear of the truck.

These lights will be activated with the running lights of the vehicle.

#### **REAR FMVSS LIGHTING**

There will be two (2) wrap around tri-cluster LED modules provided on the face of the rear body compartments.

Each tri-cluster will include the following:

- One (1) LED stop/tail light
- One (1) LED directional light
- One (1) LED backup light

#### **LICENSE PLATE BRACKET**

One (1) license plate bracket constructed of stainless steel will be provided at the rear of the apparatus.

One (1) white LED light with chrome housing will be provided to illuminate the license plate. A stainless steel light shield will be provided over the light that will direct illumination downward, preventing white light to the rear.

#### **BACK-UP ALARM**

A PRECO, Model 1040, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse will be provided. The device will sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels.

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### **CAB PERIMETER SCENE LIGHTS**

There will be four (4) Amdor, Model AY-LB-12HW0\*\*, white LED strip lights provided, one (1) for each cab door that will meet NFPA ground lighting requirements.

These lights will be activated automatically when the battery switch is on and the exit doors are opened or by the same means as the body perimeter scene lights.

### **PUMP HOUSE PERIMETER LIGHTS**

There will be one (1) Amdor, Model AY-LB-12HW020, 350 lumens, 20.00" LED weatherproof strip light with bracket provided under the passenger's side pump panel running board.

If the combination of options in the vehicle does not permit clearance for a 20.00" light, a 12.00" version of the Amdor light will be installed.

The light will be activated when the battery switch is on, and controlled by the same means as the body perimeter lights.

### **BODY PERIMETER SCENE LIGHTS**

There will be one (1) Model CLC-1049-20-AL, 20.00" 12 volt DC LED strip light provided under the side turntable access steps.

The perimeter scene lights will be activated when the parking brake is applied.

### **ENHANCED SOFTWARE FOR PERIMETER LIGHTS**

All perimeter lights will be deactivated when the parking brake is released unless alternate control is selected.

The cab and crew cab perimeter lights will remain on for ten (10) seconds for improved visibility after the doors closed.

### **STEP LIGHTS**

Two (2) white LED step lights will be provided, one (1) on each side of the front body.

The lights will be actuated with the pump panel light switch.

All steps on the apparatus will be illuminated per the current edition of applicable NFPA standards.

### **12 VOLT LIGHTING**

There will be two (2) HiViz Model FT-MB-12-\*, 2.56" high x 17.65" long x 3.31" deep 6,336 lumens 12 volt DC LED light(s) with with a combination of flood and spot optics provided on the cab roof located, one (1) on the driver's side and one (1) on the passenger's side under the lightbars.

The painted parts of the light housing and brackets to be black.

The light(s) will be controlled by a switch at the driver's side switch panel and by a switch at the passenger's side switch panel.

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The light(s) may be load managed when the parking brake is applied.

**12 VOLT LIGHTING**

There will be one (1) HiViz®, Model FT-GESM, 20,500 equivalent lumens 8.65" high x 10.61" wide x 2.78" deep light(s) with white LEDs installed on the cab behind driver side door, above side crew cab window. The light(s) to include black optic holders, black bezels and black fixture body.

The light(s) will be activated by a switch at the driver's side switch panel and by a switch at the left side pump panel.

The light(s) may be load managed when the parking brake is applied.

**12 VOLT LIGHTING**

There will be one (1) HiViz®, Model FT-GESM, 20,500 equivalent lumens 8.65" high x 10.61" wide x 2.78" deep light(s) with white LEDs installed on the cab behind officers side door, above side crew cab window. The light(s) to include black optic holders, black bezels and black fixture body.

The light(s) will be activated by a switch at the driver's side switch panel and by a switch at the left side pump panel.

The light(s) may be load managed when the parking brake is applied.

**12 VOLT LIGHTING**

There will one (1) HiViz Model FT-B-65-\*, 18,849.6 effective lumens 2.06" high x 65.23" long x 2.45" deep 12 volt DC light(s) with white LEDs and a combination of spot, and flood optics installed on the apparatus located, centered over compartment RS2, on catwalk..

The painted parts of the light housing and brackets to be black.

The light(s) will be controlled by the same control that has been selected for the passenger's side scene light(s).

The light(s) may be load managed when the parking brake is applied.

**12 VOLT LIGHTING**

There will one (1) HiViz Model FT-B-65-\*, 18,849.6 effective lumens 2.06" high x 65.23" long x 2.45" deep 12 volt DC light(s) with white LEDs and a combination of spot, and flood optics installed on the apparatus located, centered over compartment LS2, on catwalk..

The painted parts of the light housing and brackets to be black.

The light(s) will be controlled by the same control that has been selected for the driver's side scene light(s).

The light(s) may be load managed when the parking brake is applied.

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### **HOSE BED LIGHTS**

There will be two (2) Amdor, part number AY-LB-12HW040, 40.00" long 12 volt DC light strips with white LEDs and 45 degree extruded aluminum bracket provided to illuminate the hose bed area.

- One (1) light will be installed on the left side of the hose bed.
- One (1) light will be installed on the right side of the hose bed.

The lights will be activated by a cup switch at the rear of the apparatus no more than 72.00" from the ground.

### **REAR SCENE LIGHT(S)**

There will be two (2) HiViz, Model FT-GSMJR-\*, 5.04" high x 7.40" wide x 1.54" deep 5,000 raw lumens light(s) with white LEDs black trim and black optic holder(s) surface mounted at the rear of the apparatus, rear of truck, one each side, mid height..

The light(s) will be controlled by a switch at the driver's side switch panel, by a switch at the driver's side pump panel and by a cup switch at the driver's side rear bulkhead.

The light(s) may be load managed when the parking brake is applied.

### **WALKING SURFACE LIGHT**

There will be Model FRP, 4.00" round black 12 volt DC LED floodlight(s) with bolt mount provided to illuminate the entire designated walking surface on top of the body.

The light(s) will be activated when the body step lights are on.

### **WATER TANK**

The water tank will have a capacity of 500 gallons and will be constructed of polypropylene plastic in a rectangular shape.

The joints and seams will be nitrogen welded inside and out.

The tank will be baffled in accordance with the current edition of applicable NFPA standards.

The baffles will have vent openings at both the top and bottom of each baffle to permit movement of air and water between compartments.

The longitudinal partitions will be constructed of 0.38" polypropylene plastic and extend from the bottom of the tank through the top cover to allow positive welding.

The transverse partitions extend from 4.00" off the bottom to the underside of the top cover.

All partitions interlock and will be welded to the tank bottom and sides.

The tank top will be constructed of 0.50" polypropylene.

It will be recessed 0.38" and will be welded to the tank sides and the longitudinal partitions.

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It will be supported to keep it rigid during fast filling conditions.

Construction will include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions.

Two of the dowels will be drilled and tapped (0.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump will be provided at the bottom of the water tank. The sump will include a drain plug and the tank outlet.

Tank will be installed in a fabricated "cradle" assembly constructed of structural steel.

Sufficient crossmembers are provided to properly support bottom of tank.

Crossmembers are constructed of steel bar channel or rectangular tubing.

Tank "floats" in cradle to avoid torsional stress caused by chassis frame flexing.

Rubber cushions, 0.50" thick x 3.00" wide, will be placed on all horizontal surfaces that the tank rests on.

Stops are provided to prevent an empty tank from bouncing excessively while moving vehicle.

Tank mounting system is approved by the manufacturer.

Fill tower will be constructed of 0.50" polypropylene and will be a minimum of 8.00" wide x 14.00" long.

Fill tower will be furnished with a 0.25" thick polypropylene screen and a hinged cover.

An overflow pipe, constructed of 4.00" schedule 40 polypropylene, will be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.

### **HOSE BED**

The hose bed will be fabricated of 0.125" 5052-H32 aluminum with a tensile strength range of 31,000 to 38,000 psi.

The sides of the hose bed will not form any portion of the fender compartments.

The upper and rear edges of the hose bed side panels will have a double break for rigidity.

The hose bed will be located ahead of the ladder turntable.

There will be a hose chute to the side and rear of the hose bed on both the left and right side to allow for payout/removal of the hose.

The hose bed flooring will consist of removable aluminum grating with a top surface that is perforated to aid in hose aeration.

The hose bed/cargo area walls will be unpainted and dual action finished.

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Hose capacity will be a minimum of 1000' of 5.00" large diameter hose.

### **AERIAL HOSE BED HOSE RESTRAINT**

The hose in the hose beds will be restrained by black nylon Velcro® straps at the top of the hose bed and 1.00" black nylon web design with a 2.00" box pattern at the rear of the hose beds. The Velcro strap will be installed to the top of the hose bed side sheets. The rear webbing will have 1.00" web straps that loop through footman loops and fasten with spring clip and hook fasteners.

### **RUNNING BOARDS**

The running boards will be fabricated of 0.125" bright aluminum treadplate and supported by structural steel angle assemblies bolted to the chassis frame rails.

Running boards will be 13.00" deep and are spaced away from the body 0.50".

A splash guard will be provided to keep road dirt or water from splashing up onto the pump panels.

The running boards will have a riser on the body to protect the painted surface from damage by stepping on the running boards.

The entire surface of the running boards will be covered with bright aluminum treadplate.

### **TURNTABLE STEPS**

Access to the turntable will be provided by a set of swing-down steps on the left side of the truck. The bottom step to be a flip down, stirrup step. The bottom step will have a step height not exceeding 24.00" from the ground to the top surface of the step at any time. All steps will have a height no greater than 14.00" from top surface to top surface.

The access steps will be located rearward of the compartmentation.

The swing down step assembly will be constructed of D/A finished aluminum with bright aluminum treadplate steps. The steps to have a punched grip pattern design.

The stepwell will be lined with bright aluminum treadplate to act as scuffplates.

There will be a Southco raised trigger C2 chrome lever latch provided on the access door within the step well.

The step assembly will be stowed with a lift bar latching mechanism.

A knurled aluminum handrail will be provided on each side of the access steps.

Holes will be provided in each side step plate for hand holds.

The steps will be connected to the "Do Not Move Truck" indicator in the cab.

### **STEP LIGHTS**

There will be three (3) white P25 LED step lights provided for the aerial turntable access steps.

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In order to ensure exceptional illumination, each light will provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The step lights will be activated by when the parking brake is applied.

**SMOOTH ALUMINUM REAR WALL**

The rear wall will be smooth aluminum.

**TOW EYES**

Two (2) rear painted tow eyes will be located at the rear of the apparatus and will be mounted directly to the frame rails. The inner and outer edges of the tow eyes will be radiused. Each tow eye will be rated for 9000 lb. The tow eyes will be painted to match the lower job color.

**COMPARTMENTATION**

Compartmentation will be fabricated of 0.125" 5052 aluminum.

Side compartments will be an integral assembly with the rear fenders.

Circular fender liners will be provided. For prevention of rust pockets and ease of maintenance, the fender liners will be formed from aluminum and removable for maintenance.

Compartment flooring will be of the sweep out design with the floor higher than the compartment door lip.

Drip protection will be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate or polished stainless steel.

The top of the compartment will be covered with bright aluminum treadplate rolled over the edges on the front, rear and outward side. These covers will have the corners welded.

Side compartment covers will be separate from the compartment tops.

All screws and bolts, which are not Grade 8, will be stainless steel and where they protrude into a compartment will have acorn nuts on the ends to prevent injury.

**UNDERBODY SUPPORT SYSTEM**

The backbone of the body support system will begin with the aerial torque box which is the strongest component of the apparatus and is designed for sustaining maximum loads.

An aluminum body structure will be mounted to the aerial torque box at three (3) points to create a floating substructure which will result in an 800 lb equipment support rating per lower compartment and provide up to 0.31" accumulative floor thickness.

The three (3) point body mounting system will consist of two (2) points in the front and one (1) in the rear. The front mounts will attach to the top of the stabilizer H-box, and the rear mount will attach to the rear of the torque box at the chassis centerline.

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The body structure will be mounted with neoprene elastomer isolators. These isolators will have a broad load range, proven viability in vehicular applications, be of a fail-safe design and allow for all necessary movement in three (3) transitional and rotational modes.

The combination of the three (3) point mounting system and elastomer isolators allow the chassis and torque box to flex without driving loads into the body.

### **AGGRESSIVE WALKING SURFACE**

All exterior surfaces designated as stepping, standing, and walking areas will comply with the required average slip resistance of the current NFPA standards.

### **LOUVERS**

All body compartments will be vented to provide one (1) way airflow out of the compartment that prevents water and dirt from gaining access to the compartment.

### **TESTING OF BODY DESIGN**

Body structural analysis will be fully tested. Proven engineering and test techniques such as finite element analysis, model analysis, and strain gauging have been performed with special attention given to fatigue, life and structural integrity of the body and substructure.

The body will be tested while loaded to its greatest in-service weight.

The criteria used during the testing procedure will include:

- Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.
- Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions.
- Driving the vehicle on at 35 mph on a washboard road.
- Driving the vehicle at 55 mph on a smooth road.
- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement.

### **LEFT SIDE COMPARTMENTATION**

The full height roll-up door compartment ahead of the rear wheels will be 39.19" wide x 63.00" high x 26.00" deep inside the lower 26.38" and 12.00" deep inside the upper portion with a clear door opening of 36.44" wide x 56.00" high.

There will be one (1) roll-up door compartment above the wheelwell and stabilizer. The compartment will be 83.88" wide x 25.25" high x 12.00" deep inside with a clear door opening of 81.12" wide x 19.75" high.

All compartments will include a drip pan below the roll of the door.

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The full height roll-up door compartment behind the rear wheel will be 45.12" wide x 57.00" high x 26.00" deep inside the lower 25.50" and 12.00" deep in the upper portion with a clear door opening of 43.38" wide x 50.00" high.

The compartment will include a drip pan below the roll of the door.

**RIGHT SIDE COMPARTMENTATION**

The full height roll-up door compartment ahead of the rear wheels will be 39.19" wide x 64.00" high x 26.00" deep inside the lower 27.38" and 12.00" deep inside the upper portion with a clear door opening of 36.44" wide x 57.00" high.

There will be one (1) roll-up door compartment above the wheelwell and stabilizer. The compartment will be 83.88" wide x 25.25" high x 12.00" deep inside with a clear door opening of 81.12" wide x 19.75" high.

All compartments will include a drip pan below the roll of the door.

The full height roll-up door compartment behind the rear wheel will be 69.00" wide x 57.00" high x 26.00" deep inside the lower 25.50" and 12.00" deep in the upper portion with a clear door opening of 67.25" wide x 50.00" high.

The compartment will include a drip pan below the roll of the door.

**REAR COMPARTMENT**

A compartment will be provided at the rear of the unit.

Compartment will be 27.75" wide x 35.00" high x 26.25" deep with a clear door opening of 25.00" wide x 29.50" high.

The compartment will be furnished with a satin aluminum roll-up door.

A stainless steel lift bar to be provided for opening the door and located at the bottom of each door with latches on the outer extrusion of the door frame. A ledge to be supplied over lift bar for additional area to aid in closing the door. The lift bar will be located at the bottom of door with striker latches installed at the base of the side frames. Side frame mounted door strikers will include support beneath the stainless steel lift bar to prevent door curtain bounce, improve bottom seal life expectancy and to avoid false door ajar signals.

**SIDE COMPARTMENT ROLL-UP DOORS**

There will be six (6) compartment doors installed on the side compartments, double faced, aluminum construction, painted one (1) color to match the lower portion of the body and manufactured by AMDOR™ brand roll-up doors.

Door(s) will be constructed using 1.00" extruded double wall aluminum slats which will feature a flat smooth interior surface to provide maximum protection against equipment hang-up. The slats will be connected with a structural driven ball and socket hinge designed to provide maximum curtain

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diaphragm strength. Mounting and adjusting the curtain will be done with a clip system that connects the curtain to the balancer drum allowing for easy tension adjustment without tools. The slats will be mounted in reusable slat shoes with positive snap-lock securement.

Each slat will incorporate weather tight recessed dual durometer seals. One (1) fin will be designed to locate the seal within the extrusion. The second will serve as a wiping seal which will also allow for compression to prevent water ingress.

The doors will be mounted in a one (1)-piece aluminum side frame with recessed side seals to minimize seal damage during equipment deployment. All seals including side frames, top gutters and bottom panel are to be manufactured utilizing non-marring materials.

Bottom panel flange of roll-up door will be equipped with two (2) cut-outs to allow for easier access with gloved hands.

A stainless steel lift bar to be provided for opening the door and located at the bottom of each door with latches on the outer extrusion of the door frame. A ledge to be supplied over lift bar for additional area to aid in closing the door. The lift bar will be located at the bottom of door with striker latches installed at the base of the side frames. Side frame mounted door strikers will include support beneath the stainless steel lift bar to prevent door curtain bounce, improve bottom seal life expectancy and to avoid false door ajar signals.

All injection molded roll-up door wear components will be constructed of Type 6 nylon.

Each roll-up door will have a 3.00 inch diameter balancer/tensioner drum to assist in lifting the door.

The header for the roll-up door assembly will not exceed 4.00".

A heavy-duty magnetic switch will be used for control of open compartment door warning lights.

### **REAR BUMPER**

An aluminum rub rail will be provided at the rear of the unit. It will extend the full width of the body.

### **SCUFFPLATE**

A brushed stainless steel scuffplate will be furnished around the opening for the DEF fill door to prevent chipping and stain.

### **COMPARTMENT LIGHTING**

There will be seven (7) compartments that include Amdor, Model AY-LB-12HW0\*\*, white 12 volt DC LED compartment light strips with 45 degree brackets. The light manufacturers electrical connectors will be included in the circuit. The lights will be mounted with mechanical fasteners.

There will be two (2) strip lights installed vertically in each compartment opening per the latest NFPA requirements.

The lights will be activated when the battery switch is on and the respective compartment door is opened.

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**MOUNTING TRACKS**

There will be recessed tracks installed vertically to support the adjustable shelf(s).

Tracks will not protrude into any compartment in order to provide the greatest compartment space and widest shelves possible.

The tracks will be provided in each compartment except for the one that contains the pump operator's panel.

**ADJUSTABLE SHELVES**

There will be six (6) shelves with a capacity of 500 lb provided.

The shelf construction will consist of .188" aluminum painted spatter gray with 2.00" sides.

Each shelf will be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves will be held in place by .12" thick stamped plated brackets and bolts.

The location(s) will be in RS3 in the upper third, in RS1 in the upper third, in LS2 centered between the floor and ceiling, in LS3 in the upper third, in LS1 in the upper third and in RS2 centered between the floor and the ceiling to the left of the partition.

**SLIDE-OUT FLOOR MOUNTED TRAY**

There will be three (3) floor mounted slide-out tray(s) provided.

Each tray will have 2.00" high sides and a minimum capacity rating of 500 lb in the extended position.

Each tray will be constructed of aluminum painted spatter gray.

There will be two undermount-roller bearing type slides rated at 250 lb each provided. The pair of slides will have a safety factor rating of 2.

To ensure years of dependable service, the slides will be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.

To ensure years of easy operation, the slides will require no more than a 50lb force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file will have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance will be provided upon request.

Automatic locks will be provided for both the "in" and "out" positions. The trip mechanism for the locks will be located at the front of the tray for ease of use with a gloved hand.

The location(s) will be RS1, RS3 and LS1.

**DRAWER ASSEMBLY**

A slide-out drawer assembly will be installed LS3.

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The clear dimensions starting at the top of the cabinet with the first drawer will be 3.00" with a face plate that is 4.00" high x 21.00" deep. The clear dimensions of the second drawer will be 3.75" with a face plate that is 4.00" high x 21.00" deep. The clear dimensions of the third drawer will be 5.75" with a face plate that is 6.00" high x 21.00" deep. The clear dimensions of the fourth drawer will be 7.75" with a face plate that is 8.00" high x 21.00" deep. Each drawer will be the same width and not exceed 36.00".

The drawers will have a capacity of 250 pounds.

The drawers will be mounted in a cabinet housing constructed of light gray powder coated aluminum with anodized aluminum frames. The housing will be 24.00" deep, and completely enclose the drawer.

A full-length aluminum extruded rail will be provided at the top edge of each drawer. This rail will act as the latching mechanism as well as the handle for each drawer.

There will be a total of one (1) provided.

#### **SWING OUT TOOLBOARD**

A swing out aluminum toolboard will be provided.

It will be a minimum of 0.188" thick with .203" diameter holes in a pegboard pattern with 1.00" centers between holes.

A 1.00" x 1.00" aluminum tube frame will be welded to the edge of the pegboard.

The board will be mounted on a pivoting device at the front of the compartment on the top and bottom to allow easy movement in and out of the compartment. The maximum tool load will be 400 lb.

The board will have positive lock in the stowed and extended position.

The board will have a D-ring handle to secure it in the stowed position.

The board will be mounted on adjustable tracks from front to back within the compartment.

One (1) toolboard(s) will be provided. The toolboard(s) will be spatter gray painted and installed in RS2 ahead of vertical partition.

#### **VERTICAL COMPARTMENT PARTITION**

One (1) partition will be provided.

The partition construction will consist of body material painted spatter gray. Each partition will be the full vertical height of the compartment.

The location(s) will be in RS2, 60.00" from the forward door frame.

#### **PEGBOARD**

There will be 0.188" thick aluminum pegboard spatter gray painted will be installed on the back wall of one (1) compartments. It will be mounted using two (2) horizontal tracks. Retainers will be used to

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mount the pegboard to the tracks. The pegboard will be installed on the back wall. The holes will be .203" diameter, punched 1.00" on center. Pegboard will be provided in the following compartments: RS2.

### **REAR WALL**

The entire rear surface of the apparatus and all the doors will be covered with smooth aluminum.

### **RUB RAIL**

Bottom edge of the side compartments will be trimmed with a bright aluminum extruded rub rail.

Trim will be 3.12" high with 1.50" flanges turned outward for rigidity.

The rub rails will not be an integral part of the body construction, which allows replacement in the event of damage.

### **BODY FENDER CROWNS**

Polished stainless steel fender crowns will be provided around the rear wheel openings.

An unpainted fender liner will be provided to avoid paint chipping. The liners will be removable to aid in the maintenance of rear suspension components.

A dielectric barrier will be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

The fender crowns will be held in place with stainless steel screws that thread directly into a composite nut and not directly into the parent body sheet metal to eliminate dissimilar metals contact and greatly reduce the chance for corrosion.

### **HARD SUCTION HOSE**

Hard suction hose will not be required.

### **HANDRAILS**

The handrails will be 1.25" diameter knurled aluminum to provide a positive gripping surface.

Chrome plated end stanchions will support the handrail. Plastic gaskets will be used between end stanchions and any painted surfaces.

Drain holes will be provided in the bottom of all vertically mounted handrails.

Handrails will be provided to meet current edition of applicable NFPA standards. The handrails will be installed as noted on the sales drawing.

There is to be no step below the right side running board.

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**ADDITIONAL HANDRAIL**

Four (4) handrails will be mounted on boom support 4-way aluminum privacy panel ahead of pump panel to help access crosslays, two at rear of truck, one each side for the recessed camper style steps.. The handrail(s) will be constructed of knurled aluminum.

**AIR BOTTLE STORAGE**

A total of four (4) air bottle compartments will be provided and located on the left side ahead of the rear wheel, on the left side behind the rear wheel, on the right side ahead of the rear wheel and on the right side behind the rear wheel. The air bottle compartment will be a minimum of 15.00" wide x 7.50" tall x 26.00" deep. A painted stainless steel door with a Southco raised trigger C2 chrome lever latch will be provided to contain the air bottle. A dielectric barrier will be provided between the door hinge, hinge fasteners and the body sheet metal.

Inside the compartment, black rubber matting will be provided.

**EXTENSION LADDER**

There will be a 35' three (3) section aluminum Duo-Safety Series 1225-A extension ladder provided.

**AERIAL EXTENSION LADDER**

There will be one (1) 24' two (2) section aluminum Series 900-A extension ladder(s) provided and located in the ladder storage compartment.

**ROOF LADDERS**

There will be two (2) 16' aluminum Duo-Safety Series 875-A roof ladders provided.

**ADDED ROOF LADDER**

There will be one (1) aluminum, 14' Duo Safety 875-DR roof ladder provided behind boom sign driver side of aerial ladder..

**AERIAL FOLDING LADDER**

There will be one (1) 10' aluminum Duo-Safety Series 585-A folding ladder(s) provided and located in the ladder storage compartment.

**GROUND LADDER STORAGE**

Ladder tunnels will be provided at the rear of the apparatus on either side of the turntable.

Tunnels will be capable of holding up to two (2) two-section pumper style ladders on each side not in excess of 22.00" wide or 5-13/16" in thickness.

The ladders will be held captive top and bottom by stainless steel tracks. A polyethylene wear plate will be provided to prevent ladders from being scuffed by contacting metal parts. The plate will be mounted to the bottom of the entrance area of the ladder tunnels.

All ladders will be removable individually without having to remove any other ladder.

A Velcro® strap will be provided to help contain the ladders.

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A smooth aluminum door with a chrome D-Ring latch will be provided on each ladder tunnel.

### **12' PIKE POLES**

There will be two (2) Fire Hooks Unlimited Model RH-12' New York Roof Hook with a fiberglass shaft and pry end provided. The pike pole(s) will be stored in tubular holders located in the ground ladder storage compartment.

### **8' PIKE POLE**

There will be two (2) Fire Hooks Unlimited APH-8, 8' pike pole(s) with fiberglass handles and gas shut off end provided.

### **6' PIKE POLE**

There will be two (2) Fire Hooks Unlimited Model APH-6, 6' pike pole(s) with fiberglass handles provided.

### **PIKE POLE PROVIDED BY FIRE DEPARTMENT**

The pike poles are not on the apparatus as manufactured. The fire department will provide and mount the pike poles.

There will be two (2) pike pole(s) provided. The pike pole(s) will be a Fire Hooks Unlimited 4' New York Roof Hook with D handle.

### **PIKE POLE STORAGE IN TORQUE BOX/LADDER STORAGE**

There will be aluminum tubing provided in the torque box/ladder storage area for a total of six (6) pike poles. The pike pole tube(s) will be notched to allow a New York style pike pole to fit in the tube.

If the head of a pike pole can come into contact with a painted surface, a stainless steel scuffplate will be provided.

### **STEPS**

A folding step will be provided on the front of each fender compartment for access to the hose bed. The step will be bright finished, non-skid with a black tread coating on the stepping surface. The step will incorporate an LED light to illuminate the stepping surface. The step can be used as a hand hold with two openings wide enough for a gloved hand.

### **PULL-OUT/DROP DOWN STEP**

A total of two (2) pull-out and drop down, camper style step(s) will be provided on the rear wall of the body, located on the left and right side to provide easy access to the rear hose bed(s).

Each step will be 19.00" wide x 8.00" deep. The stepping surface will be bright aluminum treadplate.

Each step will include an Amdor LumaBar, Model AY-LB-12HW0\*\* to illuminate the ground area beneath the step.

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Each step will include a white 12 volt DC LED light to illuminate the stepping surface.

A rubber draw latch will be provided to retain the step in the stowed position.

Four (4) additional folding steps will be located two additional step's, each side of truck, on front body bulkheads.. The step(s) will be bright finished, non-skid with a black tread coating on the stepping surface. Each step will incorporate an LED light to illuminate the stepping surface. The step(s) can be used as a hand hold with two openings wide enough for a gloved hand.

### **STIRRUP STEP**

There will be one (1) stirrup step(s) provided below the body. Each step will be designed with a grip pattern punched into bright aluminum treadplate material, providing support, slip resistance and drainage. The step(s) will be a bolt-on design and provide an 18.50" wide x 5.00" deep stepping surface.

The step(s) will be located under passenger side running board.

The stirrup step(s) will be lit by a white 12 volt DC LED light provided on the step.

The additional step(s) lights will be activated by the same means as the standard step lights.

### **PUMP COMPARTMENT**

The pump compartment will be separate from the hose body and compartments so that each may flex independently of the other. The pump compartment will be constructed of the same material as the body compartmentation.

The pump compartment substructure will be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards.

The pump compartment will be mounted on the chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist.

Pump compartment, pump, plumbing and gauge panels will be removable from the chassis in a single assembly.

### **PUMP MOUNTING**

Pump will be mounted to a substructure which will be mounted to the chassis frame rail using rubber isolators. The mounting will allow chassis frame rails to flex independently without damage to the fire pump.

### **LEFT SIDE PUMP CONTROL PANELS**

All pump controls and gauges will be located at the left (driver's) side of the apparatus and properly identified.

Layout of the pump control panel will be ergonomically efficient and systematically organized.

The pump operator's control panel will be removable in two (2) main sections for ease of maintenance:

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The upper section will contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable). Sub panels will be removable from the face of the pump panel for ease of maintenance. Below the sub panels will be located all valve controls and line pressure gauges.

The lower section of the panel will contain all inlets, outlets, and drains.

All push/pull valve controls will have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods will be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls will be capable of locking in any position. The control rods will pull straight out of the panel and will be equipped with universal joints to eliminate binding.

### **IDENTIFICATION TAGS**

The identification tag for each valve control will be recessed in the face of the tee handle.

All discharge outlets will have color coded identification tags, with each discharge having its own unique color. Color coding will include the labeling of the outlet and the drain for each corresponding discharge.

All line pressure gauges will be mounted directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification. The gauge and rod guide casting will be removable from the face of the pump panel for ease of maintenance. The casting will be color coded to correspond with the discharge identification tag.

All remaining identification tags will be mounted on the pump panel in chrome plated bezels.

The pump panel on the right (passenger's) side will be removable with lift and turn type fasteners.

Trim rings will be installed around all inlets and outlets.

### **PUMP**

Pump will be a Waterous CSU, 2000 gpm single (1) stage midship mounted centrifugal type.

Pump will be the class "A" type.

Pump will deliver the percentage of rated discharge at pressures indicated below:

- 100 percent of rated capacity at 150 psi net pump pressure.
- 70 percent of rated capacity at 200 psi net pump pressure.
- 50 percent of rated capacity at 250 psi net pump pressure.

Pump body will be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings).

Pump will be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping.

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Pump case halves will be bolted together on a single horizontal face to minimize a chance of leakage and facilitate ease of reassembly. No end flanges will be used.

Discharge manifold of the pump will be cast as an integral part of the pump body assembly and will provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency.

The three (3) 3.50" openings will be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the discharge manifold.

Impeller shaft will be stainless steel, accurately ground to size. It will be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller will have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply.

Bearings will be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. No special or sleeve type bearings will be used.

Pump will be equipped with a self-adjusting, maintenance-free, mechanical shaft seal.

The mechanical seal will consist of a flat, highly polished, spring fed carbon ring that rotates with the impeller shaft. The carbon ring will press against a highly polished stainless steel stationary ring that is sealed within the pump body.

In addition, a throttling ring will be pressed into the steel chamber cover, providing a very small clearance around the rotating shaft in the event of a mechanical seal failure. The pump performance will not deteriorate, nor will the pump lose prime, while drafting if the seal fails during pump operation.

Wear rings will be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear.

### **PUMP TRANSMISSION**

The pump transmission will be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump will be through a high strength Morse HY-VO silent drive chain. By using a chain rather than gears, 50 percent of the sprocket will be accepting or transmitting torque, compared to two (2) or three (3) teeth doing all the work.

Drive shafts will be 2.35" diameter hardened and ground alloy steel and supported by ball bearings. The case will be designed to eliminate the need for water cooling.

### **PUMPING MODE**

An interlock system will be provided to ensure that the pump drive system components are properly engaged so that the apparatus can be safely operated. The interlock system will be designed to allow stationary pumping only.

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### **AIR PUMP SHIFT**

Pump shift engagement will be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control will also be located on the left side pump panel.

Two (2) indicator lights will be provided adjacent to the pump shift inside the cab. One (1) green light will indicate the pump shift has been completed and be labeled "pump engaged". The second green light will indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light will be labeled "OK to pump".

The pump shift will be interlocked to prevent the pump from being shifted out of gear when the chassis transmission is in gear to meet NFPA requirements.

The pump shift control in the cab will be illuminated to meet NFPA requirements.

### **TRANSMISSION LOCK-UP**

The direct gear transmission lock-up for the fire pump operation will engage automatically when the pump shift control in the cab is activated.

### **AUXILIARY COOLING SYSTEM**

A supplementary heat exchange cooling system will be provided to allow the use of water from the discharge side of the pump for cooling the engine water. The heat exchanger will be a separate unit. It will be installed in the pump or engine compartment with the control located on the pump operator's control panel. The exchanger will be plumbed to the master drain valve.

### **PUMP INTAKE RELIEF VALVE**

An Akron Style 53 relief valve will be installed on the suction side of the pump preset at 125 psig.

The relief valve will have a working range of 50 psi to 250 psi.

The outlet will terminate below the frame rails with a 2.50" National Standard hose thread adapter and will have a "do not cap" warning tag.

The relief valve pressure control will be located behind the right side pump panel with a stainless steel access door.

### **PRESSURE CONTROLLER**

A FRC Pump Boss 500 electronic pressure controller with one (1) 600 PSI transducer on the pump discharge will be provided. All readouts will be standard PSI.

When a single 300 psi or single 600 psi pressure transducer is selected the transducer is installed in the discharge side of the water pump. The transducer continuously monitors pump pressure sending a signal to the electronic pressure controller.

When a dual 600 psi pressure transducer is selected the transducer are installed in the discharge side and intake side of the water pump. The discharge transducer continuously monitors pump pressure

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sending a signal to the electronic pressure controller. The intake transducer continuously monitors the pump intake sending a signal to the electronic pressure controller.

The pressure controller can be used in two (2) modes of operation, RPM mode and pressure modes. The controller will be programmed to turn on/default to RPM Setting mode.

In RPM mode, the controller can be activated after vehicle parking brake has been set. When in this mode, the controller will maintain the set engine speed, regardless of engine load (within engine operation capabilities).

In pressure mode, the controller can be activated after vehicle parking brake has been set. When in this mode, the controller will automatically maintain the discharge pressure set by the operator (within the discharge capabilities of the pump and water supply) regardless of flow.

A 2.00" diameter throttle control knob with no mechanical stops, a serrated grip, and a red idle push button in the center will be a integrated/part of the pressure controller. The throttle control knob will be programmed for Clockwise rotation to increase engine speed.

Individual LED indicators for ok to pump, throttle ready, pressure mode and rpm mode will be located on the pressure controller for easy viewing.

Safety features include recognition of low water and no water conditions with an automatic programmed response and a push button to return the engine to idle.

An additional audible alarm will NOT BE provided.

The pressure controller screen will be LCD. The LCD screen and LED intensity will be automatically adjust for day and nighttime operation. The LCD screen intensity can also be manually adjusted if needed.

The following information will be provided/displayed on the LCD screen:

- Engine RPM
- Check engine and stop engine warning indicators
- Engine oil pressure
- Engine coolant temperature
- Transmission Temp
- Battery voltage
- Operating mode (RPM or pressure)
- Pressure or RPM setting

On screen messaging show diagnostic and warning messages as they occur. It will show apparatus information, stored data, and program options when selected by the operator. It will monitor inputs outputs and support audible and visual warning alarms for the following conditions:

- High battery voltage

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- Low battery voltage/engine off
- Low battery voltage/engine running
- High water pump temperature
- Low engine oil pressure
- High engine coolant temperature
- No engine response (visual alarm only)

The pressure controller will store the accumulated operating hours for the pump and engine. These items are to be displayed within the pressure controller menu.

The pressure controller will include a USB port on the back of the controller for easy software upgrades if needed.

### **PRIMING PUMP**

The priming pump will be a Trident Emergency Products compressed air powered, high efficiency, multistage venturi based AirPrime System, conforming to standards outlined in the current edition of applicable NFPA standards.

All wetted metallic parts of the priming system are to be of brass and stainless steel construction.

One (1) priming control will open the priming valve and start the pump primer.

### **PUMP MANUALS**

There will be a total of two (2) pump manuals provided by the pump manufacturer and furnished with the apparatus. The manuals will be provided by the pump manufacturer in the form of two (2) electronic copies. Each manual will cover pump operation, maintenance, and parts.

### **PLUMBING, STAINLESS STEEL AND HOSE**

All inlet and outlet lines will be plumbed with either stainless steel pipe, flexible polypropylene tubing or synthetic rubber hose reinforced with hi-tensile polyester braid. All hose's will be equipped with brass or stainless steel couplings. All stainless steel hard plumbing will be a minimum of a schedule 10 wall thickness.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping will be equipped with victaulic or rubber couplings.

Plumbing manifold bodies will be ductile cast iron or stainless steel.

All piping lines are to be drained through a master drain valve or will be equipped with individual drain valves. All drain lines will be extended with a hose to drain below the chassis frame.

All water carrying gauge lines will be of flexible polypropylene tubing.

All piping, hose and fittings will have a minimum of a 500 PSI hydrodynamic pressure rating.

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### **FOAM SYSTEM PLUMBING**

All piping that is in contact with the foam concentrate or foam/water solution will be stainless steel. The fittings will be stainless steel or brass. Cast iron pump manifolds will be allowed.

### **MAIN PUMP INLETS**

A 6.00" pump manifold inlet will be provided on each side of the vehicle. The suction inlets will include removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

### **MAIN PUMP INLET CAP**

The main pump inlets will have National Standard Threads with a long handle chrome cap.

The cap will be the Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

### **VALVES**

All ball valves will be Akron® Brass. The Akron valves will be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve.

Valves will have a **ten (10) year** warranty.

The location of the valve for the one (1) inlet will be recessed behind the pump panel.

### **INLET CONTROL**

The side auxiliary inlet(s) will incorporate a quarter-turn ball valve with the control located at the inlet valve. The valve operating mechanism will indicate the position of the valve.

### **LEFT SIDE INLET**

There will be one (1) auxiliary inlet with a 2.50" valve at the left side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet will be provided with a strainer, chrome swivel and plug.

### **RIGHT SIDE INLET**

There will be one (1) auxiliary inlet with a 2.50" valve at the right side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter.

The auxiliary inlet will be provided with a strainer, chrome swivel and plug.

### **FRONT INLET PROVISION**

Provisions for a front inlet will be provided on the right side pump suction manifold. Flange will be capped off for possible addition of front inlet at a later date.

### **INLET BLEEDER VALVE**

A 0.75" bleeder valve will be provided for each side gated inlet.

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The valves will be located behind the panel with a "T" swing style handle control extended to the outside of the panel.

The handles will be chrome plated and provide a visual indication of valve position. The swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage.

The water discharged by the bleeders will be routed below the chassis frame rails.

### **TANK TO PUMP**

The booster tank will be connected to the intake side of the pump with stainless steel piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line will run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling will be included in this line to prevent damage from vibration or chassis flexing.

A check valve will be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

### **TANK REFILL**

A 1.50" combination tank refill and pump re-circulation line will be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

### **DISCHARGE OUTLET CONTROLS**

The discharge outlets will incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism will indicate the position of the valve.

If a handwheel control valve is used, the control will be a minimum of a 3.90" diameter stainless steel handwheel with a dial position indicator built into the center of the handwheel.

Any 3.00 inch or larger discharge valve will be a slow-operating valve to meet current edition of applicable NFPA standards.

### **LEFT SIDE DISCHARGE OUTLETS**

One (1) discharge outlet with a 2.50" valve will be provided on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

### **LEFT SIDE OUTLET ELBOWS**

The 2.50" discharge outlets located on the left side pump panel will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

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**RIGHT SIDE DISCHARGE OUTLET**

One (1) discharge outlet with a 2.50" valve will be provided on the right side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

**RIGHT SIDE OUTLET ELBOWS**

The 2.50" discharge outlets located on the right side pump panel will be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow will be Pierce VLH, which incorporates an exclusive thread design to automatically relieve stored pressure in the line when disconnected.

There will be a 4.00" discharge outlet with a 3.00" valve with a 3.00" ball, installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread adapter. This discharge outlet will be actuated with a handwheel control with position indicator at the pump operator's control panel.

**ADDITIONAL RIGHT SIDE OUTLET ELBOWS**

The 4.00" outlet will be furnished with a 4.00" (F) National Standard hose thread x 5.00" Storz elbow adapter with Storz cap.

**FRONT DISCHARGE OUTLET**

There will be one (1) 1.50" discharge outlet piped to the front of the apparatus and located in the center bumper tray.

Plumbing will consist of 2.00" piping and flexible hose with a 2.00" ball valve with control at the pump operator's panel. A fabricated weldment made of stainless steel pipe will be used in the plumbing where appropriate. The piping will terminate with a 1.50" NST with 90 degree stainless steel swivel.

There will be automatic drains provided at all low points of the piping.

**DISCHARGE CAPS/ INLET PLUGS**

Chrome plated, rocker lug, caps with vinyl covered cables will be furnished for all discharge outlets 1.00" thru 3.00" in size, besides the pre-connected hose outlets.

Chrome plated, rocker lug, plugs with vinyl covered cables will be furnished for all auxiliary inlets 1.00" thru 3.00" in size.

The caps and plugs will incorporate a thread design to automatically relieve stored pressure in the line when disconnected.

**OUTLET BLEEDER VALVE**

A 0.75" bleeder valve will be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

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The valves will be located behind the panel with a T swing style handle control extended to the outside of the side pump panel.

The handles will be chrome plated and provide a visual indication of valve position.

The T swing handle will provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage.

Bleeders will be located at the bottom of the pump panel. They will be properly labeled identifying the discharge they are plumbed in to.

The water discharged by the bleeders will be routed below the chassis frame rails.

### **AERIAL WATERWAY OUTLET**

The aerial waterway will be plumbed from the water pump to the aerial device waterway with 5.00" pipe and a 4.00" Akron valve.

The valve will be controlled with a Pierce large handwheel with indicator located at the pump operator's panel.

### **CROSSLAY HOSE BEDS**

Two (2) crosslays with 1.50" outlets will be provided. Each bed to be capable of carrying 200' of 1.75" double jacketed hose and will be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay controls will be at the pump operator's panel.

The center crosslay dividers will be fabricated of 0.25" aluminum and will provide adjustment from side to side. The divider will be unpainted with a brushed finish.

Vertical scuffplates constructed of polished stainless steel will be provided at the front and rear ends of the bed on each side of vehicle.

Crosslay bed flooring will consist of removable perforated brushed aluminum.

### **2.50" CROSSLAY HOSE BED**

One (1) crosslay with 2.50" outlets will be provided. This bed to be capable of carrying 200' of 2.50" double jacketed hose and will be plumbed with 2.50" i.d. pipe and gated with a 2.50" quarter turn ball valve.

Outlet to be equipped with a 2.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay control will be at the pump operator's panel.

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When used in conjunction with other crosslay/speedlay/deadlay configurations, a center crosslay divider, when needed, will be fabricated of .25" aluminum and will provide adjustment from side to side. The divider will be unpainted with a brushed finish. The remainder of the crosslay bed will be painted job color.

Polished stainless steel vertical scuffplates will be provided at hose bed ends (each side of vehicle). Bottom of hose bed ends (each side) will also be equipped with a polished stainless steel scuffplate.

Crosslay bed flooring will consist of removable perforated brushed aluminum.

#### **CROSSLAY HOSE RESTRAINT**

A 2.00" black nylon webbing design restraint will be provided at each of the ends of three (3) crosslay(s) to secure the hose during travel. The webbing assembly is to be attached at the bottom of the crosslays, with footman loops and a permanent attachment, and is to attach at the top outside corners with seat belt buckles. The female end of the seat buckle will be permanently attached at the top corner of the opening. A bar will be attached to the female ends of the seat belt buckles to allow a single pull release. A single orange nylon strap will be attached to the bar for releasing the buckles on the webbing.

#### **CROSSLAY/DEADLAY HOSE RESTRAINT**

The crosslay/deadlay hosebed(s) will have three (3) 2.00" wide black nylon straps with Velcro fasteners provided across the top to secure the hose during travel. The straps will extend from the front to back across the top of the hosebed(s).

#### **HUSKY 3/12 FOAM SYSTEM PLUMBING (FUTURE INSTALLATION)**

Foam manifold/piping will be provided for the future installation of a Husky 3/12 foam system. The foam system will be plumbed to 1- Front bumper outlet 3- Crosslays discharges.

A foam manifold will be provided for the foam ready discharges. The plumbing from the water pump to the foam manifold will be designed to allow a Husky 3 or Husky 12 foam system to be added without much unnecessary rework.

Space will be provided on the pump panel for the possible addition of the foam system controls.

#### **FOAM TANK**

The foam tank will be an integral portion of the polypropylene water tank. The cell will have a capacity of 20 gallons of foam with the intended use of Class A foam. The foam cell will not reduce the capacity of the water tank. The foam cell will have a screen in the fill dome and a breather in the lid.

#### **FOAM TANK DRAIN**

The foam tank drain will be a 1.00" drain valve located inside the pump compartment accessible through a door on the right side pump panel.

#### **PUMP PANEL CONFIGURATION**

The pump panel configuration will be arranged and installed in an organized manner that will provide user-friendly operation.

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### **PUMP OPERATOR'S PLATFORM**

A pull out, flip down platform will be provided at the pump operator's control panel.

The front edge and the top surface of the platform will be made of DA finished aluminum with a Morton Cass insert.

The platform will be approximately 13.75" deep when in the stowed position and approximately 22.00" deep when extended. The platform stepping surface will be 35.00" wide. The platform will lock in the retracted and the extended position.

The sides, bottom and rear portions of the support assembly will be painted to match lower job color.

The platform will be wired to the "step not stowed" indicator in the cab.

### **PUMP OPERATOR'S PLATFORM PERIMETER LIGHT**

There will be an On Scene Solutions, Model Night Stick Access, 20.00" white 12 volt DC LED strip light provided to illuminate the ground area.

### **PUMP AND GAUGE PANEL**

The pump and gauge panels will be constructed of aluminum with a painted FormCoat black finish. A polished aluminum trim molding will be provided around each panel.

### **PUMP ACCESS**

#### **Right Side Panel**

The right side upper pump panel will be removable.

#### **Panel Fastener**

The removable panels will be secured with black swell latch.

The left side pump panels will be attached with screws.

The right side lower pump panel (drain bank) will be attached with screws.

### **PUMP COMPARTMENT LIGHT**

There will be two (2) Whelen®, Model 3SC0CDCR, 3.00" white 12 volt DC LED light(s) with Whelen, Model 3FLANGEC, flange(s) installed in the pump compartment.

Engine monitoring graduated LED indicators will be incorporated with the pressure controller.

Also provided at the pump panel will be the following:

- Master Pump Drain Control

### **THROTTLE READY GREEN INDICATOR LIGHT**

There will be a green indicator light integrated with the pressure governor and/or engine throttle installed on the pump operators panel that is activated when the pump is in throttle ready mode.

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**OK TO PUMP INDICATOR LIGHT**

There will be a green indicator light installed on the pump operators panel that is activated when the pump is in Ok To Pump mode.

**AIR HORN SWITCH**

An air horn control switch will be provided at the pump operator's control panel. This switch will be momentary red and properly labeled. The switch will be located within easy reach of the operator in the electrical switch panel.

**VACUUM AND PRESSURE GAUGES**

The pump vacuum and pressure gauges will be liquid filled and manufactured by Class 1 Incorporated.

The gauges will be a minimum of 4.00" in diameter and will have white faces with black lettering, with a pressure range of 30.00"-0-600#.

Gauge construction will include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

The pump pressure and vacuum gauges will be installed adjacent to each other at the pump operator's control panel.

Test port connections will be provided at the pump operator's panel. One (1) will be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They will have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They will be marked with a label.

This gauge will include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

**PRESSURE GAUGES**

The individual "line" pressure gauges for the discharges will be Class 1 interlube filled.

They will be a minimum of 2.00" in diameter and have white faces with black lettering.

Gauge construction will include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

Gauges will have a pressure range of 30"-0-400#.

The individual pressure gauge will be installed as close to the outlet control as practical.

This gauge will include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

**WATER LEVEL GAUGE**

There will be an electronic water level gauge provided on the operator's panel that registers water level by means of five (5) colored LED lights. The lights will be durable, ultra-bright five (5) LED design viewable through 180 degrees. The water level indicators will be as follows:

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- 100 percent = Green
- 75 percent = Yellow
- 50 percent = Yellow
- 25 percent = Yellow
- Refill = Red

The light will flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights will flash sequentially when the water tank is empty.

The level measurement will be based on the sensing of head pressure of the fluid in the tank.

The display will be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design will provide complete protection from water and environmental elements. An industrial pressure transducer will be mounted to the outside of the tank. The field calibratable display measures head pressure to accurately show the tank level.

The main water level gauge will be powered with battery switch.

There will be a Hale part number 106877, 4-light driver module included with this installation to power additional water level gauges.

The remote level lights will be energized when pump is in gear.

#### **WATER LEVEL GAUGE - ADDITIONAL**

A water level gauge system will be provided behind crew cab doors, above cab handrail.. Each system will be provided with four (4) Whelen® Model 50\*02Z\*R Linear LED lights with chrome trim. The total quantity of water level gauge systems to be provided will be two (2).

The lights will be mounted and indicate the following:

- The top green light - water level full.
- Next blue light - water level 3/4 full.
- Next amber light - water level 1/2 full
- Bottom red light - water level 1/4 full when on solid and will flash when empty.
- The lens color(s) to be the same as the LEDs.

The flash rate will be determined by the main water tank sensor.

The above system will function similar to the standard five (5) light at the pump panel. The system will activate pump is in gear.

#### **FUTURE FOAM LEVEL GAUGE**

Provision will be provided in the foam cell for the future addition of a foam system and level gauge.

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### **LIGHT SHIELD**

There will be a polished, 16 gauge stainless steel light shield installed over the pump operator's panel.

- There will be 12 volt DC white LED lights installed under the stainless steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights will be activated by the pump panel light switch. Additional lights will be included every 18.00" depending on the size of the pump house.
- One (1) pump panel light will come on when the pump is in ok to pump mode.

The switch panel will be lit when the parking brake is set. This is to afford the operator illumination when first approaching the control panel.

### **AIR HORN SYSTEM**

Two (2) Grover air horns will be recessed in the front bumper.

The air horns will be chrome.

The air horn system will be piped to the air brake system wet tank utilizing 0.38" tubing. A pressure protection valve will be installed to prevent the loss of air in the brake system.

### **Air Horn Location**

The air horns will be located on each side of the bumper, just outside of the frame rails.

### **Air Horn Control**

The air horn(s) will be activated by the following:

- Right side lanyard. The lanyard to be vinyl covered 0.12" cable.
- Steering wheel horn ring with electric/air horn selector switch

### **ELECTRONIC SIREN**

A Whelen, Model: 295SLSC1, electronic siren with a plug-in, detachable noise canceling microphone will be provided.

This siren to be active when the battery switch is on and that emergency master switch is on.

### **ELECTRIC SIREN, LOCATION**

Siren head will be mounted Switch panel POS A .

### **ELECTRONIC SIREN CONTROL**

The electronic siren will be activated by the following:

- The right side push button.

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**SPEAKER**

There will be one (1) Whelen®, Model SA315P, black nylon composite, 100-watt, speaker with through bumper mounting brackets and polished stainless steel grille provided. The speaker will be connected to the siren amplifier.

The speaker(s) will be recessed in the center of the front bumper.

**AUXILIARY MECHANICAL SIREN**

There will be a Federal Signal Model Q2B mechanical siren furnished and installed in the front of the apparatus.

The Q2B will be chrome finish.

The siren will have a 2-gauge cable connected to a power solenoid that is connected by a 2-gauge cable ran battery direct to the primary chassis batteries and will be labeled Q2B+ at the battery. The power solenoid will only be enabled when the emergency master switch is on.

The siren will have a 2-gauge ground wire connected to the chassis battery stud. The cable will be labeled Q2B- at the battery.

The mechanical siren will be mounted on the bumper deck plate. It will be mounted on the left side. A reinforcement plate will be furnished to support the siren.

**MECHANICAL SIREN CONTROL**

The mechanical siren will be activated by the following:

- Linemaster part number 632-SC36 as the left side foot switch.
- Linemaster part number 632-SC36 as the right side foot switch.

A momentary chrome push button switch will be included in the right side dash panel to activate the siren brake.

**ACTIVATION FOR WARNING LIGHTS INTENSITY**

When parking brake is set, the designated Whelen® warning lights on the cab and the warning lights on the body will transition to a low power intensity by default.

In order for the activation of low power mode of the warning lights, the battery switch, the ignition switch, the emergency master switch, must be on, and the parking brake set.

The low power intensity mode will be reset when any of the above conditions are not met.

A switch will be provided to over ride the low power intensity mode and allow for full power intensity when parking brake is set. The over ride switch will be disabled and reset with release of parking brake

**FRONT ZONE UPPER WARNING LIGHTS**

There will be two (2) 21.50" Whelen® Freedom™ IV LED lightbars mounted on the cab roof, one (1) on each side, above the left side and right side doors, facing forward.

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The left side lightbar will include the following:

- One (1) red flashing LED module in the outside end position.
- One (1) red flashing LED module in the outside front corner position.
- One (1) red flashing LED module in the outside front position.
- One (1) white flashing LED module in the inside front position.
- One (1) red flashing LED module in the inside front corner position.

The right side lightbar will include the following:

- One (1) red flashing LED module in the inside front corner position.
- One (1) white flashing LED module in the inside front position.
- One (1) red flashing LED module in the outside front position.
- One (1) red flashing LED module in the outside front corner position.
- One (1) red flashing LED module in the outside end position.

There will be clear lenses included on the lightbar.

Each light bar will have the low intensity mode wires connected to the controlling circuit.

There will be a switch in the cab on the switch panel to control the lightbars.

The white LED module will be deactivated when the parking brake is applied.

The red flashing forward facing and the two (2) red flashing inside front corner LED modules may be load managed when the parking brake is applied.

### **FRONT ZONE LOWER LIGHTS**

There will be two (2) pair of Whelen, Model M6\*\*, LED lights installed on the cab face above the headlights, in a common bezel matching the one for the headlamps.

- The driver's side front outside warning light to be red
- The driver's side front inside warning light to be red
- The passenger's side front inside warning light to be red
- The passenger's side front outside warning light to be red
- The color of the lenses will be clear

There will be a switch located in the cab on the switch panel to control the lights.

Each light will have the low intensity mode wire connected to the controlling circuit.

### **DAYTIME RUNNING LIGHTS (HEADLIGHTS)**

The low-beam headlights used as daytime running lights will be activated with the following measures:

- Ignition switch is turned on
- Parking brake is released

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These lights will be deactivated with any one of the following measures:

- Headlight switch is turned on
- High-beam flash is turned on
- Parking brake is set

### **HEADLIGHT FLASHER**

The high beam headlights will flash alternately between the left and right side.

There will be a switch installed in the cab on the switch panel to control the high beam flash. This switch will be live when the battery switch and the emergency master switches are on.

The flashing will automatically cancel when the hi-beam headlight switch is activated or when the parking brake is set.

### **SIDE ZONE LOWER LIGHTING LOW INTENSITY**

There will be six (6) Whelen®, Model M6\*\*, 4.31" high x 6.75" long x 1.37" deep flashing LED warning lights with chrome trim installed per the following:

- Two (2) lights located, one (1) each side on the bumper extension. The driver's side, side front light to include red warning LEDs and the passenger's side, side front light to include red warning LEDs.
- Two (2) lights located, one (1) each side above the front wheels. The driver's side, side middle light to include red warning LEDs and the passenger's side, side middle light to include red warning LEDs.
- Two (2) lights located, one (1) each side above rear wheels. The driver's side, side rear light to include red warning LEDs and the passenger's side, side rear light to include red warning LEDs.
- The warning light lens color(s) to be clear.

There will be a switch in the cab on the switch panel to control the lights.

Each light will have the low intensity mode wire connected to the controlling circuit.

Any flashing white lights will be disabled when the parking brake is set.

### **REAR ZONE LOWER LIGHTING**

There will be two (2) Whelen®, Model M6\* LED flashing warning lights with chrome trim located at the rear of the apparatus.

- The driver's side rear light to be red
- The passenger's side rear light to be red

The lens color(s) to be clear.

There will be a switch located in the cab on the switch panel to control the lights.

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The light(s) will have the low intensity mode wire connected to the controlling circuit.

**REAR WARNING LIGHTS**

There will be two (2) Whelen®, Model M6\*\*, 4.31" high x 6.75" wide x 1.37" deep flashing LED warning light(s) with chrome trim provided at the rear of the apparatus, rear of truck, mid height, one each side.

The light(s) to include red flashing LEDs. The warning light lens color(s) to be clear.

These light(s) will be controlled with the rear upper warning switch.

The light(s) may be load managed when the parking brake is applied.

The light(s) will have the low intensity mode wire connected to the controlling circuit.

**REAR/SIDE ZONE UPPER WARNING LIGHTS**

There will be two (2) Whelen®, Model L31H\*F, LED warning beacons provided at the rear of the truck, located one (1) each side.

The LEDs color of the lights will be red with both domes clear.

There will be a switch located in the cab on the switch panel that controls the beacons when the emergency master and battery switch are on.

The violet wire of each beacon will be connected to the low intensity control. When the low intensity control is activated, the beacons will go into DVI SingleFlash 75 Hi Intensity pattern.

**TRAFFIC DIRECTING LIGHT**

There will be one (1) Whelen®, Model TAL65, 36.00" long x 2.87" high x 2.25" deep, amber LED traffic directing light installed at the rear of the apparatus.

The Whelen, Model TACTL5, control head will be included with this installation.

The controller will be energized when the battery switch is on.

The auxiliary flash not activated.

This traffic directing light will be mounted on top of the body below the turntable with a treadplate box at the rear of the apparatus.

The traffic directing light control head will be located in the driver side overhead switch panel in the right panel position.

**120 VOLT RECEPTACLE**

There will be one (1), 15/20 amp 120 volt AC three (3) wire straight blade duplex receptacle(s) with interior stainless steel wall plate(s), installed behind officer seat. The NEMA configuration for the receptacle(s) will be 5-20R.

The receptacle(s) will be powered from the shoreline inlet.

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There will be a label installed near the receptacle(s) that state the following:

- Line Voltage
- Current Rating (amps)
- Phase
- Frequency

#### **120 VOLT RECEPTACLE**

There will be one (1), 15/20 amp 120 volt AC three (3) wire straight blade duplex receptacle(s) with an interior stainless steel wall plate, installed upper back wall centered RS1 & LS3. The NEMA configuration for the receptacle(s) will be 5-20R.

The receptacle(s) will be powered from the shoreline inlet.

There will be a label installed near the receptacle(s) that state the following:

- Line Voltage
- Current Rating (amps)
- Phase
- Frequency

#### **FOUR (4)-SECTION 107 FOOT AERIAL LADDER**

##### **CONSTRUCTION STANDARDS**

The ladder will be constructed to meet all of the requirements as described in the current NFPA standards.

The aerial device will be a true ladder type device; therefore ladders attached to booms will not be considered.

These capabilities will be established in an unsupported configuration.

All structural load supporting elements of the aerial device that are made of a ductile material will have a design stress of not more than 50% of the minimum yield strength of the material based on the combination of the live load and the dead load. This 2:1 structural safety factor meets the current edition of applicable NFPA standards.

All structural load supporting elements of the aerial device that are made of non-ductile material will have a design stress of not more than 20% of the minimum ultimate strength of the material, based on the combination of the rated capacity and the dead load. This 5:1 safety factor meets the current edition of applicable NFPA standards.

Wire ropes and attaching systems used to extend and retract the fly sections will have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope will remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used will be 1:12. Wire ropes will be constructed of

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seven (7) strands over an inner wire core for increased flexibility. The wire rope will be galvanized to reduce corrosion.

The aerial base pivot bearings will be maintenance free type bearings and require no external lubrication.

The aerial device will be capable of sustaining a static load one and one-half times its rated tip load capacity (live load) in every position in which the aerial device can be placed when the vehicle is on a firm level surface.

The aerial device will be capable of sustaining a static load one and one-third times its rated tip load capacity (live load) in every position the aerial device can be placed when the vehicle is on a slope of five degrees downward in the direction most likely to cause overturning.

With the aerial device out of the cradle and in the fully extended position at zero degrees elevation, a test load will be applied in a horizontal direction normal to the centerline of the ladder. The turntable will not rotate and the ladder will not deflect beyond what the product specification allows.

All welding of aerial components, including the aerial ladder sections, turntable, pedestal, and outriggers, will be in compliance with the American Welding Society standards. All welding personnel will be certified, as qualified under AWS welding codes.

The aerial device will be capable of operating with the maximum rated tip load in either of the two (2) following conditions:

- Conditions of high wind up to 35 mph
- Conditions of icing, up to a coating of 0.25" over the entire aerial structure

All of the design criteria must be supported by the following test data:

- Strain gage testing of the complete aerial device
- Analysis of deflection data taken while the aerial device was under test load

The following standards for materials are to be used in the design of the aerial device:

- Materials are to be certified by the mill that manufactured the material
- Material testing that is performed after the mill test will be for verification only and not with the intent of changing the classification
- All welded structural components for the ladder will be traceable to their mill lots

### **LADDER CONSTRUCTION**

The ladder will be comprised of four sections.

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The ladder will have the capability to support a minimum of 750 pounds at the tip in the unsupported configuration, based upon 360 degree rotation, up to full extension and from -10 degrees to +77 degrees.

The ladder (handrails, baserails, trusses, K-braces and rungs) will be constructed of high strength low alloy steel, minimum 100,000 pounds per square inch yield, with full traceability on all structural members.

Each section will be trussed vertically and horizontally using welded steel tubing.

All ladder rungs will be welded to each section utilizing "K" bracing for torsional rigidity.

The inside width dimensions of the ladder will be:

- Base Section 41.87"
- Inner-Mid Section 34.88"
- Outer-Mid Section 27.87"
- Fly Section 21.63"

The height of the handrails above the centerline of the rungs will be:

- Base Section 26.28"
- Inner-Mid Section 22.68"
- Outer-Mid Section 20.06"
- Fly Section 17.32"

The ladder will be designed to provide continuous egress for firefighters and civilians from an elevated position to the ground. The end of the fly section will be constructed in a manner that aids personnel in climbing off the ladder.

The egress section will be designed to maintain the rated load of the aerial device. It will be bolted on for easy replacement. There will be a lift eye welded on to each side of the egress.

### **VERTICAL HEIGHT**

The ladder will extend to a minimum height of 107' above the ground at full extension and elevation. The measurement of height will be consistent with NFPA standards.

### **HORIZONTAL REACH**

The rated horizontal reach will be a minimum of 100'. The measurement of horizontal reach will be consistent with NFPA standards.

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### **TURNTABLE**

The upper turntable assembly will connect the aerial ladder to the turntable bearing. The steel structure will have a mounting position for the aerial elevation cylinders, ladder connecting pins, and upper turntable operator's position.

The turntable will be coated with a non-skid, chemical resistant material in the walking areas. The stepping surfaces will meet the skid-resistance requirements of the current edition of applicable NFPA standards.

The turntable will be modified at the passenger side to allow for easier access to the hose bed for hose loading. The portion of the turntable outboard of the rotational motor will be omitted, and the handrails will be modified as required.

The turntable handrails will be a minimum 42.00" high and will not increase the overall travel height of the vehicle. The handrails will be constructed from aluminum and have a slip resistant knurled surface.

### **ELEVATION SYSTEM**

Dual 5.50" diameter elevating cylinders will be mounted on the underside of the base section of the ladder, one (1) on each side. One (1) 2.25" diameter stainless steel pin will fasten each cylinder to the ladder and one (1) 2.50" diameter stainless steel pin will fasten each cylinder to the turntable. The pins will have 125,000 psi minimum yield strength and will be secured with 0.50" Grade 8 bolts with castle nut and cotter pin. The bolts are to ensure that the pins do not walk out of the mounting brackets on the turntable and base section.

The elevating cylinders will be mounted utilizing maintenance-free spherical bearings on both ends of the cylinders. The aerial base pivot bearings will be maintenance-free type bearings with no external lubrication required. The cylinders will function only to elevate the ladder and not as a structural member to stabilize the ladder side movement. The elevating cylinders will be provided with pilot-operated check valves on the barrel and rod side of the piston to prevent movement of the ladder in case of a loss of hydraulic pressure.

The operation envelope will be 10 degrees below horizontal to 77 degrees above horizontal.

The elevation system will be designed following NFPA standards. The elevation hydraulic cylinders will incorporate cushions on the upper limit of travel.

The lift cylinders will be equipped with integral holding valves located in the cylinder to prevent the unit from descending should the charged lines be severed, at any point within the hydraulic system and to maintain the ladder in the bedded position during road travel. The integral holding valves will NOT be located in the transfer tubes.

The elevation system will be controlled by the microprocessor. Linear transducers will measure the extension of the elevation cylinder. The microprocessor will provide the following features:

- Collision avoidance of the elevation system to prevent accidental body damage

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- Automatic deceleration when the aerial device is lowered into the cradle
- Automatic deceleration at the end of stroke, in maximum raise and lower positions
- Deceleration of the aerial device at the limits of travel.

### **EXTENSION/RETRACTION SYSTEM**

A hydraulically powered, extension and retraction system will be provided through dual hydraulic cylinders and wire ropes. Each set will be capable of operating the ladder in the event of a failure, of the other. The extension cylinder rod will be chrome plated to provide smooth operation of the aerial device and reduce seal wear. The extension/retraction cylinders will be equipped, with integral holding valves, to prevent the unit from retracting should the charged line be severed, at any point within the hydraulic system. The integral holding valves will NOT be located in the transfer tubes.

Wire ropes and attaching systems used to extend and retract the fly sections will have a 5:1 safety factor based on the ultimate strength under all operating conditions. The factor of safety for the wire rope will remain above 2:1 during any extension or retraction stall. The minimum ratio of the diameter of wire rope used to the diameter of the sheave used will be 1:12. Wire ropes will be constructed of seven (7) strands over an inner wire for increased flexibility. The wire rope will be galvanized to reduce corrosion.

The extension/retraction system will be controlled by the microprocessor. Linear transducers will measure the ladder extension. The microprocessor will provide the following features:

- Automatic deceleration at the end of stroke, in maximum extend and retract positions

All sheaves will require lubrication. They will have bronze bushings and grease zerks.

### **MANUAL OVERRIDE CONTROLS**

Manual override controls will be provided for all aerial and stabilizer functions.

### **LADDER SLIDE MECHANISM**

UHMW polyethylene wear pads will be used between the telescoping ladder sections, to provide greater bearing surface area for load transfer. Adjustable slide pads will be used to control side play between the ladder sections.

### **ROTATION SYSTEM**

The aerial will be supplied with a powered rotation system as outlined in NFPA standards. The hydraulic rotation motor will provide continuous rotation under all rated conditions and be supplied with a brake to prevent unintentional rotation. One (1) hydraulically driven, planetary gear box with drive speed reducers will be used to provide infinite and minute rotation control throughout the entire rotational travel. One (1) spring applied, hydraulically released disc type swing brake will be furnished to provide positive braking of the turntable assembly. Provisions will be made for emergency operation of the rotation system should complete loss of normal hydraulic power occur. The hydraulic system will be equipped with pressure relief valves which will limit the rotational torque to a nondestructive power. The gearbox will have a minimum continuous torque rating of 80,000 in. lbs. and a minimum

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intermittent rating of 160,000 in. lbs. The turntable bearing, ring gear teeth, pinion gear, planetary gearbox, and output shaft will be certified by the manufacturer of the components for the application.

The rotation system will be controlled by the microprocessor. The microprocessor will provide the following features:

- Collision avoidance to prevent accidental body damage
- Prevent the aerial from being rotated into an unstable condition.

**ROTATION INTERLOCK**

The microprocessor will be used to prevent the rotation of the aerial device to the side in which the stabilizers have not been fully deployed (short-jacked). The microprocessor will allow full and unrestricted use of the aerial, in the 180 degree area, on the side(s) where the stabilizers have been fully deployed. The system will also have a manual override, to comply with NFPA. SYSTEMS THAT PERMIT THE AERIAL TO ROTATE TO THE "SHORT JACK" SIDE, WITHOUT AUTOMATICALLY STOPPING THE ROTATION AND/OR WITHOUT ACTUATION OF THE "MANUAL OVERRIDE", will NOT BE ACCEPTED. SYSTEMS THAT ONLY INCLUDE AN ALARM ARE NOT CONSIDERED AN INTERLOCK AND will NOT BE ACCEPTED.

**LADDER CRADLE INTERLOCK SYSTEM**

A ladder cradle interlock system will be provided through the microprocessor to prevent the lifting of the aerial device from the nested position until the operator places all the stabilizers in a load supporting configuration. A switch will be installed at the boom support to prevent operation of the stabilizers once the aerial has been elevated from the nested position.

**AERIAL TORQUE BOX/PEDESTAL**

The pedestal assembly will be a welded assembly made of high strength 0.25" plate. The vertical member will be a 0.375" reinforced wall cylinder with a 28.00" outside diameter and will connect the rotation bearing mounting plate to the lower substructure.

The pedestal assembly will be bolted to the chassis frame with 0.88" diameter Grade 8 bolts, and will be utilized to mount the outrigger jacks and reservoir for the aerial hydraulic system.

**LOAD CAPACITIES**

The following load capacities will be established, with the stabilizers at full horizontal extension and placed in the down position, to level the truck and to relieve the weight from the tires and axles.

Capacities will be based upon full 360 degree rotation with ladder extended to operational limits at 0 degrees elevation.

A load chart, visible at the operator's station will be provided. The load chart will show the recommended safe load at any condition of the aerial device's elevation and extension.

**35 MPH WIND CONDITIONS/WATERWAY DRY**

Degrees of	-10 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 77
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Elevation								
Egress	750	750	750	750	750	750	750	750
Fly	-	-	-	-	250	250	500	750
Upper Mid	-	-	-	-	250	500	1000	1000
Lower Mid	-	-	-	500	500	750	1000	1000
Base	-	-	500	500	500	1000	1000	1000

**35 MPH WIND CONDITIONS/WATERWAY CHARGED**

Degrees of Elevation	-10 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 77
Egress	500	500	500	500	500	500	500	500
Fly	-	-	-	-	-	250	500	500
Upper Mid	-	-	-	250	500	500	750	1000
Lower Mid	-	-	-	250	500	750	1000	1000
Base	-	-	250	500	750	1000	1000	1000

**Reduced loads at the tip can be redistributed in 250 lb. increments to the fly, mid, or base sections as needed.**

**The tip capacity will be reduced to zero when flowing water with the nozzle above the waterway centerline.**

**BOOM SUPPORT**

A heavy duty boom support will be provided for support of the ladder in the travel position. On the base section of the ladder, a stainless steel scuffplate will be provided where the ladder comes into contact with the boom support.

The boom support will be located just to the rear of the chassis cab.

**AERIAL BOOM SUPPORT LIGHT**

There will be one (1) Amdor®, Model AY-LB-12HW012, 190 lumen, 12" long, white LED strip light mounted on the boom support cradle. This light will be activated when the aerial master switch is activated.

**FUTURE BOOM SUPPORT COMPARTMENT PROVISION**

There will be 0.50" of wheelbase added to allow for a boom support compartment to be added at a future time.

**AERIAL BOOM PANEL**

There will be one boom panel provided on the base section on the left side of the aerial device while viewed from the turntable. This boom panel will be sized to match the storage box on the opposite side. The boom panel will be painted #90 red.

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The boom panel will be designed so no mounting bolts are in the face of the panel. This will keep the lettering surface free of holes.

### **FOLDING STEPS**

One (1) set of folding steps will be provided at the tip of the ladder. An additional set of folding steps will be provided at the base of the fly section. The steps will be bright finished with a black tread coating on the stepping surface. Each step will have no integrated light.

### **AERIAL DEVICE RUNG COVERS**

Each rung will be covered with a secure, heavy-duty, fiberglass pultrusion that incorporates an aggressive, no-slip coating.

The rung covers will be glued to each rung and will be easily replaceable should the rung cover become damaged.

The center portion of each rung cover will be black and the outside 2.00" edge at each side will be safety yellow.

Under no circumstances will the rung covers be fastened to the rungs using screws or rivets.

The rung covers will have a 10-year, limited warranty.

### **LADDER STORAGE MOUNTING BRACKETS**

Mounting will be provided on the left side of the aerial device while viewed from the turntable for storage of one (1) roof ladder(s). The bracket(s) will be located inboard of the boom panel at the base section. The bracket(s) will hold the boom panel as close to the base section as possible and include straps to secure the ladder.

The mounting brackets will accommodate a 14' Duo-Safety 875-DR roof ladder as determined by the type of aerial device and the available space.

### **STABILITY TEST**

An aerial stability test will be run on the apparatus using the maximum weight allowance for tip options.

### **STOKES AND BACKBOARD STORAGE BOX**

There will be one (1) aluminum storage box(es) provided at the base section of the aerial ladder on the right side of the aerial device while viewed from the turntable. The box will be painted to match the aerial device with the face of the box painted to match the boom sign color. The box(es) will be located in place of the aerial boom panel and have a hinged cover with pair of rubber draw latches to secure the equipment. The cover will have the same finish as the box. The cover will be tied in to the open door indicator circuitry when in the open position. A divider will be provided to separate the stokes basket and the backboard. The box(es) will have no louvers.

The size of the stokes basket will be 86.00" long x 24.00" wide x 8.00" high. The size of the backboard will be 72.00" long x 18.00" wide x 2.00" high.

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The maximum capacity of each box will be 75 lb.

### **LIGHTS FOR TURNTABLE WALKWAY**

There will be white LED lights provided at the aerial turntable. The lights will be located to illuminate the entire walking surface of the turntable including the area around the turntable console. These lights will be activated by the aerial master switch.

### **TURNTABLE CONSOLE LIGHTING**

There will be one (1) TecNiq, Model T10, white LED light strip mounted in the turntable console cover to illuminate the controls located on both the upper and lower portion of the turntable control station. These lights will be activated by the aerial master switch.

### **INFORMATION CENTER**

There will be an information center provided. The information center will operate in temperatures from -40 to 158 degrees Fahrenheit. The information center will employ a Linux operating system and a 7.00" (diagonal measurement) LCD display. The LCD will have a minimum 1000nits rated, color display. The LCD will be sunlight readable, true digital operation, and will have improved resolution. The LCD display will be encased in an ABS, grey plastic housing. There will be five (5), weather-resistant user interface switches provided. The LCD display can be changed to an available foreign language.

### **Operation**

The information center will be designed for easy operation in everyday use. There will be a page button to cycle from one screen to the next screen in a rotating fashion. A video button will allow an NTSC signal into the information center to be displayed on the LCD. If any button is pressed while viewing a video feed, the information center will return to the vehicle information screens. There will be a menu button to provide access to maintenance, setup, and diagnostic screens. All other button labels will be specific to the information being viewed.

### **General Screen Design**

Where possible, background colors will be used to provide vehicle information *At A Glance*. If the information provided on a screen is within acceptable limits, a black background color will be used. If the information provided on a screen is not within acceptable limits, an amber background color will indicate a caution condition and a red background color will indicate a warning condition.

Every screen in the information center will include the time (12- or 24-hour mode) and a fault alert triangle symbol. The time will be synchronized between all Command Zone color displays located on the vehicle. Once the fault alert triangle is selected, a text message will identify any items causing the audible alarm to sound. If more than one (1) audible alarm is activated, the text message for each alarm will cycle every second until the problems have been resolved. The background for the Alert Center will change to indicate the severity of the warning message. Amber will indicate a caution condition and red will indicate a warning condition. If a warning and a caution condition occur simultaneously, the red background color will be shown for all Alert Center messages.

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A label or symbol will be provided for each button. The label or symbol will indicate the function for each active button for each screen. If the button is not utilized on specific screens, it will remain black.

Symbols will accurately depict the aerial device type the information pertains to such as rear mount ladder, rear mount platform, mid-mount ladder or mid-mount platform.

### **Page Screens**

The Information center will include the following pages:

The Aerial Main and Load Chart page will indicate the following information:

Rungs Aligned and Rungs Not Aligned will be indicated with respective green or red colored ladder symbols.

Ladder Elevation will be indicated via a fire apparatus vehicle with ladder symbol with the degree of elevation indicated between the vehicle and ladder.

Water Flow (if applicable) will be indicated via a water nozzle symbol and text indicating flow / time.

If applicable, breathing air levels will be indicated via an air bottle symbol and text indicating the percent (%) of air remaining. A green bar graph shown inside the bottle will indicate oxygen levels above 20 percent. A red bar graph will indicate oxygen levels at or below 20 percent. When oxygen levels are at or below 10 percent, the red bar graph will flash.

*At A Glance* color features will be utilized on this screen. A fault alert triangle symbol in the lower right portion of the screen will indicate any caution faults with a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

The Aerial Reach and Hydraulic Systems page will indicate the following information:

If applicable, aerial hydraulic oil temperature will be indicated with symbol and text.

Aerial Hydraulic Oil Pressure will be indicated with a symbol and text.

The following calculations will be indicated on a representative vehicle symbol:

Aerial Device Extension length

Aerial Device Height indicating the height of the aerial device tip from the ground

Aerial Device Angle indicating the angle from the vehicle which the device is at.

*At A Glance* color features will be utilized on this screen. A fault alert triangle symbol in the lower right portion of the screen will indicate any caution faults with a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

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The Level Vehicle page will indicate the following information:

The grade of the vehicle will be indicated via a fire apparatus vehicle symbol with the degree of grade shown in text format. The symbol will tilt dependent on the vehicle grade.

The slope of the vehicle will be indicated via a fire apparatus vehicle symbol with the degree of slope shown in text format. The symbol will tilt dependent on the vehicle slope.

Outriggers status will be indicated via a colored symbol for each outrigger present. Each outrigger status will be defined as one of the following:

Outrigger stowed indicated with a silver pan located close to the vehicle

Outrigger fully extended indicated with a fully deployed green outrigger

Outrigger short-jacked indicated by a yellow outrigger partially deployed

Outrigger not set indicated by a red outrigger that is not set on the ground

A bedding assist alert will indicate that the aerial device is being aligned by the Command Zone system as the operator lowers the aerial device into the cradle with the joystick.

*At A Glance* color features will be utilized on this screen. A fault alert triangle symbol in the lower right portion of the screen will indicate any caution faults with a yellow background. Warning type conditions will be indicated via a red background. Conditions operating within acceptable limits will be indicated via a green background.

The aerial operation envelope page will indicate the following:

- A top view of the aerial operating envelope
- A side view of the aerial operating envelope

### **Menu Screens**

The following screens will be available through the Menu button:

- The View System Information screen will display aerial device hours, aerial PTO hours, ladder aligned for stowing, aerial rotation angle, total water flow (if applicable), and aerial waterway valve status (if applicable).
- The Set Display Brightness screen will allow brightness increase and decrease and include a default setting button.
- The Configure Video Mode screen will allow setting of video contrast, video color and video tint.
- The Set Startup screen allows setting of the screen that will be active at vehicle power-up.
- The Set Date and Time screen has a 12- or 24-hour format, and allows setting of the time and date.
- The View Active Alarms screen shows a list of all active alarms including the date and time of each alarm occurrence, and shows all alarms that are silenced.

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- The System Diagnostics screen allows the user to view system status for each module and its respective inputs and outputs. Viewable data will include the module type and ID number; the module version; and module diagnostics information including input or output number, the circuit number connected to that input or output, the circuit name (item connected to the circuit), status of the input or output, and other module diagnostic information.
- Aerial Calibrations screen indicates items that may be calibrated by the user and instructions to follow for proper calibration of the aerial device.

Button functions and button labels may change with each screen.

### **Lower Stabilizer Control Stations**

A lower control station will be located on each side of the rear wall of the apparatus in an easily accessible area. The controls and indication labels will be illuminated for nighttime operation. The following items will be furnished at the lower control station and will be clearly identified and conveniently located for ease of operation and viewing:

- Level assist switch
- Override switch to override interlocks
- Emergency stop
- Emergency hydraulic power unit switch

The stabilizer controls will include the following:

- Leveling assist toggle switch
- Left and right side stabilizer beam in/out switches
- Left and right side stabilizer beam up/down switches
- Rear stabilizer up/down switch

### **Turntable Control Station**

There will be one (1) device control station located on the left side of the turntable so the operator may easily observe the ladder while operating the controls. All elevation, extension and rotation controls will operate from this location. The controls will permit the operator to regulate the speed of the aerial functions, within the safe limits, as determined by the manufacturer and NFPA standards. Each control will be equipped with a positive lock to hold the control in a neutral position preventing accidental activation. In addition to the neutral lock, a console cover will be provided at the turntable control station. The controls will be so designed to allow the turntable control station to immediately override the tip controls, if equipped, even if the ladder is being operated by the tip controls.

The following items will also be provided at the turntable control station, clearly identified and illuminated for nighttime operation and conveniently located for ease of operation and viewing:

- Intercom controls
- Tip tracking light switch
- Emergency stop switch

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- Emergency power unit switch
- Operator's load chart
- Two (2) position switch for selecting aerial operational speed
- Ladder illumination switch (if equipped)
- Aerial monitor switches (if equipped)

### **High Idle**

The high idle will be controlled by the microprocessor. The microprocessor will automatically adjust the engine rpm, to compensate for the amount of load placed upon the system. The system will include a safety device that allows activation of the high idle, only when the parking brake is set and the transmission is placed in neutral.

### **STABILIZERS**

The vehicle will come equipped with an out and down stabilization system. The system will consist of two (2) hydraulically operated out and down style stabilizers mounted above the frame and a rear stabilizer jack that is attached directly to the center rear of the torque box.



The stabilizers will have a maximum spread of 18' from the centerline of the footpads when fully extended. The internal tubes will be 8.00" x 10.00" with 1/2" thick top and bottom plates and 3/8" thick sides of 130,000 psi minimum yield strength steel and will be extended out by hydraulic cylinders. The cylinders will have pilot-operated check valves with thermal relief. This will insure that the beams will be in the stowed during travel. The external tubes will be 9-3/4" x 11-3/4" with 3/8" wall thickness. The internal jack tubes will slide on permanently attached wear pads.

The extension cylinders will be totally enclosed within the extension beams. The horizontal extension cylinders will be of the trombone type to eliminate wear and potential failure of hydraulic hoses.

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The stabilizers will have a tip over safety margin of 1 1/2 times its rated load in any position the aerial device can be placed as outlined in the current edition of NFPA. The aerial will be able to sustain a 1 1/3 to 1 rated load on a 5 degree slope downward in the position most likely to cause overturning. The maximum ground slope the apparatus can be set up on is 12 percent. On the 12 percent slope, the apparatus can be leveled within a 6 percent operating range with the apparatus cab facing uphill.

The cylinders will be supplied with dual pilot operated check valves on each stabilizer cylinder to hold the cylinder in the stowed or working position should a charged line be severed at any point in the hydraulic system. Stabilizers will contain safety lock valves and will require no mechanical pins to assure there will be no "leak down" of stabilizer legs.

Each stabilizer leg will have attached to the end of the leg a pan that will be a maximum 13.00" wide to allow the extension of the stabilizer between parked cars. This pan will serve as a protective guard and a mounting surface for warning lights. The top, forward, and rear edges will be flanged back for added strength.

The stabilizer cylinders will be sized to maximize ground penetration. The lift cylinders will be mounted on the end of the stabilizer tube and will have the following dimensions:

4.00" bore

3.50" rod

23.38" stroke

The stabilizer extension cylinders will have the following dimensions

1.75" bore

1.25" rod

64.00" stroke

The rear stabilizer will have the following dimensions:

4.50" bore

4.00" rod

29.00" stroke

Each stabilizer that can be extended from the body will be supplied with a red warning light as outlined in the current edition of NFPA. The stabilizers will be connected to a warning light in the cab to warn the operator if the stabilizers are deployed.

The ground contact area for each stabilizer will be a 12.00" diameter circular stainless steel disc without the auxiliary pads and 24.00" x 24.00" with lightweight composite material pads deployed. The ground pressure will not exceed 75 psi when the apparatus is fully loaded and the aerial device is carrying its

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rated capacity in every position. This will be accomplished with the stabilizer pads deployed, as outlined in the current edition of NFPA. There will be one (1) pad located on each side of the apparatus in front of the stabilizers.

The auxiliary jack pad for the rear stabilizer will be integral to the stabilizer foot pad.

### **STABILIZER CONTROLS**

One (1) electric solenoid valve will control the stabilizers. The control switches will be located one (1) each side at the rear of the apparatus so the operator may observe the stabilizers during deployment.

The stabilizer controls will include the following:

- Leveling assist toggle switch: The outrigger control system will incorporate a computerized self leveling system in addition to the standard outrigger controls. The operator will have the option to manually or automatically level the truck. The computerized system will ensure full outrigger extension, proper jack penetration, and will level the vehicle within 1/2 a degree of level for safe operation of the aerial device.
- One (1) electric toggle switch for the engaging the emergency power unit.
- Two (2) fully extended beams green indicator lights: these lights will be illuminated when each of the respective stabilizer beams are fully extended.
- Three (3) firm on ground green indicator lights: each light will be illuminated when its respective stabilizer shoe is in the load supporting condition.

Each toggle switch will activate the engine fast idle automatically.

Manual override will be supplied for each stabilizer control valve.

A stabilizer deployment audible warning alarm will be provided and activated by the stabilizer movement.

A "Stabilizers Not Stowed" indicator will be provided in the driver's compartment. It will illuminate automatically whenever the stabilizers are not fully stowed to prevent damage to the apparatus if moved. The stabilizer system will also be wired to the "Do Not Move Indicator Light", which will flash whenever the apparatus parking brake is not fully engaged and the stabilizers are not fully stowed.

### **STABILIZER PAN MATERIAL**

The aerial stabilizer pans will be stainless steel, painted to match the lower body color.

### **STABILIZER CONTROL BOX DOORS**

A vertically hinged smooth aluminum door will be provided over each stabilizer control box. The door will be hinged along the outboard edge and be provided with a Southco C2 chrome raised trigger lever latch.

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### **STABILIZER PLACEMENT**

There will be two (2) cameras provided and installed on the body, one (1) directly above each stabilizer. The cameras will be activated with a switch in the cab and will provide a picture to specify the fully extended stabilizer position allowing the driver the ability to position the vehicle with the proper clearance for stabilizer deployment.

### **HYDRAULIC SYSTEM**

All hose assemblies will be assembled and crimped by the hose manufacturers certified technician.

All manufacturing employees responsible for the installation of hydraulic components will be properly trained. Training will include: proper handling, installation, torque requirements, cleanliness and quality control procedures for hydraulic components.

Hoses used in the aerial hydraulic system will be of a premium quality hose with a high abrasion resistant cover. All pressure hoses will have a working pressure of 4000 psi and a burst pressure rating of 16,000 psi.

All hydraulic fittings and tubing will be plated to minimize corrosion.

The fitting will use an O-ring seal where possible to minimize hydraulic leaks.

An interlock will be provided that prevents activation of the hydraulic pump until the transmission is placed in neutral and the parking brake is set as outlined in the current NFPA standard.

The system will meet the performance requirement of the current NFPA standard, which requires adequate cooling less than 2.5 hours of operations.

All hydraulic components that are non-sealing whose failure could result in the movement of the aerial will comply with current NFPA standards and have burst strength of 4:1.

Dynamic sealing components whose failure could cause aerial movement will have a margin of 2:1 on maximum operating pressure per the current NFPA standard.

All hydraulic hoses, tubes, and connections will have a minimum burst strength of 4:1 per the current NFPA standard.

A hydraulic oil sight gauge will be supplied at the rear of the unit for easy fluid level verification.

A chassis mounted positive displacement piston pump for consistent pressure and rapid responses will supply hydraulic power for all aerial operations. The positive displacement pump will provide 3,150psi. The hydraulic pump will be solely dedicated to aerial operations.

Each aerial will be evaluated as to the region and climate where it will be used to determine the optimum viscosity and proper oil grade. Oil viscosity will be based on an optimum range of 80 to 1000 SUS during normal aerial use. Before shipment of the unit, an oil sample will be taken and analyzed to confirm the oil is within the allowable ISO grade tolerance.

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The aerial hydraulic system will have a minimum oil cleanliness level of ISO 18/15/13 based on the ISO 4406:1999 cleanliness standard. Each customer will receive a certificate of actual cleanliness test results and an explanation of the rating system.

Each aerial will include an oil sample port, identified with a yellow dust cap and a label, for subsequent customer testing.

Ball valves will be provided in the hydraulic suction lines to permit component servicing without draining the oil reservoir.

The aerial will incorporate the use of trombone steel tubes inside the stabilizer beams to eliminate hydraulic hose wear and leaks.

Hydraulic power to the ladder will be transferred from the pedestal by a hydraulic swivel.

The system hydraulic pressure will be displayed on the turntable display.

The hydraulic system will be additionally protected from excessive pressure by a secondary pressure relief valve set at 3,150 psi. In the event the main hydraulic pump compensator malfunctions, the secondary relief will prevent system damage.

#### **HYDRAULIC CYLINDERS**

All cylinders used on the aerial device will be produced by a manufacturer that specializes in the manufacture of hydraulic cylinders.

Each cylinder will include integral safety holding cartridges.

Each cylinder will be designed to a minimum safety factor of 4:1 to failure.

All safety holding cartridges will be installed at the cylinder manufacturer, in a controlled clean environment to avoid possible contamination and or failure.

#### **POWER TAKEOFF/HYDRAULIC PUMP**

The apparatus will be equipped with a power takeoff driven by the chassis transmission and actuated by an electric shift, located inside the cab. The power takeoff which drives the hydraulic pump will meet all the requirements for the aerial unit operations.

A green indicator light will be installed on the cab instrument panel to notify the operator that the power takeoff is engaged.

An interlock will be provided that allows operation of aerial power only after the chassis spring brake has been set and the chassis transmission has either been placed in the neutral position or drive position after the driveline has been disengaged from the rear axle.

The hydraulic system will be supplied by a variable displacement load and pressure compensating piston pump. The pump will meet the demands of all three simultaneous aerial functions. The pump

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will provide proper flow for single aerial function with the engine at idle speed. A switch will be provided on the control console to increase the engine speed for multiple function operation.

### **EMERGENCY PUMP**

The hydraulic system will be designed with an auxiliary power unit meeting the guidelines of the current NFPA standard.

The aerial will be equipped with an emergency hydraulic pump, electrically driven from the truck batteries. The pump will be capable of running for 30 minutes for limited aerial functions to stow the unit in case of a main pump or truck system failure. A momentary switch will be located at the stabilizer and aerial control locations to activate the emergency pump.

### **AERIAL CONTROL VALVE**

The aerial hydraulic control valve will be designed with special spool flows, limiting the oil flow for the designed function speed. The valve will be electrically controlled and be located in the control console with the handles oriented downward for manual operation. The activation handles will be spaced a minimum of 3.50" for ease of operation. The valve spools will be designed to bleed off downstream pressure, in the neutral position and allow proper sealing of any cylinder holding cartridge.

### **OIL RESERVOIR**

The oil reservoir will have a minimum capacity of 20 gallons. The oil fill location will be easily accessible and be labeled "Hydraulic Oil Only" and also indicate the grade of oil that is installed in the reservoir. The fill will have a desiccant breather filter with a water capacity of 4 fluid ounces and a 5 micron rating.

Two suction ports will be provided, one for the main hydraulic pump and one for the emergency pump. The main suction will be slightly elevated off the bottom of the reservoir. The emergency suction port will be closer to the bottom of the reservoir to provide some reserve oil for emergency operation.

A temperature sending unit in the reservoir will provide indication of the oil temperature on an electronic display.

The hydraulic oil reservoir will be labeled per the current edition of NFPA standard.

### **RETURN FILTER**

The low pressure oil filter will be integrated with the hydraulic manifold and designed to prevent oil loss during filter change. The system will incorporate the following filter to provide dependable service:

- return filter: beta 200 at 6 micron

### **HYDRAULIC SWIVEL**

The aerial ladder will be equipped with a six (6) port, high pressure hydraulic swivel which will connect the hydraulic lines from the hydraulic pump and reservoir through the rotation point to the aerial control bank. The hydraulic swivel will allow for 360 degree continuous rotation of the aerial.

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### **ELECTRIC SWIVEL**

The ladder will be equipped with an electric swivel to allow 360 degrees rotation of the aerial while connecting all electrical circuits through the rotation point. A minimum of 28 collector rings will be provided that are capable of supplying 20 amp continuous service. All collector rings will be enclosed and protected with desiccant plugs against condensation and corrosion. No oil or silicone will be used.

### **WATER SWIVEL**

Water will be transferred to the aerial waterway by means of a 5.00" internal diameter waterway through the swivel, permitting 360 degree continuous rotation.

### **13-BIT ABSOLUTE ENCODER**

The aerial ladder will be equipped with a 13-Bit Absolute Encoder, CAN-based, which provides 8192 counts per shaft turn for position and direction reference.

The 13-Bit Absolute Encoder will provide a unique binary word to reference each position and direction for all 360 degrees of rotation.

If the power is interrupted for any reason, the 13-Bit Absolute Encoder will allow power to be returned to the system without having to re-zero the settings.

The 13-Bit Absolute Encoder will be an integral part of a micro-processor based control system.

### **ELECTRICAL SYSTEM**

The standard 8 conductor cable to the tip contains 10 AWG conductors.

The aerial device will utilize a microprocessor-based control system. The system will consist of the following components:

#### Control System Modules

Each of the control system modules will be configured as follows:

Sealed to a NEMA 4X rating

Operating range from -40 degrees F to 156 degrees F (-40 degrees C to 70 degrees C)

Communicate using J1939 data link

Two (2) diagnostic LED lights

One (1) green light that illuminates when module has power (B+) and ground

One (1) red light that flashes to indicate the module is capable of communicating via the data link

Up to 16 diagnostic LEDs on each module

Ground matrix identification system

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The following control system modules will be used:

Control Module

Main controller for the system

USB connection allows for computer diagnostics

Power Module

Built-in fault sensing

Eight (8) digital outputs

Pulse width modulating (PWM) capable

10A continuous per output

Circuit protection based on actual current draw (not affected by heat)

Current Control Module

Built-in fault sensing

Three (3) analog inputs

Eight (8) digital outputs

Pulse width modulating (PWM) capable

3A continuous per output

Closed Loop System

Circuit protection based on actual current draw (not affected by heat)

Input Module

16 software selectable (digital or analog) inputs

Output Module

16 digital outputs

Input/Output Module

Eight (8) software selectable (digital or analog) inputs

Eight (8) digital outputs

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**TIP LIGHT**

There will be two (2) Whelen® Model MP\*\*, 5,695 lumens 12 volt DC LED lights installed at the tip of the aerial device.

One (1) will be located on the left side with left side tip light to include spot optics.

One (1) will be located on the right side with right side tip light to include spot optics.

- The light(s) to be installed on adjustable bail bracket(s).
- The painted parts of this light assembly to be black

The lights will be controlled with the tracking lights.

**TRACKING LIGHTS**

There will be two (2) Whelen® MP\*\*, 5,695 lumens 12 volt DC LED lights installed on the base section of the aerial device below the hand rails per the following:

- One (1) will be located on the left side with left side tracking light to include spot optics.
- One (1) will be located on the right side with right side tracking light to include spot optics.
- The light(s) to be installed on adjustable bail bracket(s).
- The painted parts of this light assembly to be black.

The tracking lights will be controlled by a switch located at the platform/tip and turntable.

**LIGHTING ON AERIAL LADDER**

There will be TecNiq, Model D02 LED rung lighting provided on both sides of the aerial ladder base, lower and upper mid, and fly sections. The lighting will be located adjacent to the ladder rungs along the lower rail of the ladder sections and will run the length of the ladder section.

The color of the sections will be:

- The base section of the ladder to be red.
- The lower mid section of the ladder to be red.
- The upper mid section of the ladder to be red.
- The fly section of the ladder, excluding the egress, to be red.

The LED rung lighting will be activated when a switch at the turntable operator's panel is activated through the master battery switch.

The lights may be load managed when the parking brake is applied.

**STABILIZER WARNING LIGHTS**

There will be two (2) Whelen®, Model M6\*\*, 4.31" high x 6.75" wide x 1.37" deep flashing LED warning lights with chrome trim installed per the following:

- The left side rear stabilizer pan warning light to include red LEDs.

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- The right side rear stabilizer pan warning light to include red LEDs.

The lens color(s) to be clear.

The lights will be activated by the same switch as the side warning lights or the aerial master switch.

Each light will have the low intensity mode wire connected to the controlling circuit.

### **STABILIZER BEAM WARNING LIGHTS**

There will be two (2) Whelen®, Model T0R00FRR, 2.00" round red LED flashing lights mounted on each out and down stabilizer, one (1) facing forward and one (1) facing rearward.

The lights will be recessed in the horizontal beam of the stabilizer.

These warning lights will be activated with the aerial master switch.

### **STABILIZER SCENE LIGHTS**

There will be three (3) Amdor, Model AY-LB-12HW012, 190 lumens, 12.00" long, white LED strip lights installed to illuminate the area around the aerial stabilizers, one (1) light per stabilizer. The lights will be activated by the aerial master switch.

### **COMMUNICATION SYSTEM**

An Atkinson communication system will be furnished between the aerial tip and the turntable operator's position. The communication system will be a two (2)-way system with the communication speaker at the tip requiring no operator attention to transmit or receive. The transmitting and receiving volume controls will be located at the turntable operator's position.

### **AERIAL PEDESTAL**

The aerial pedestal will accommodate the height of the cab.

### **LIFTING EYE ASSEMBLY - ROPE RESCUE ATTACHMENT**

A lifting eye assembly will be provided that is designed to evenly distribute load at the tip of the aerial. The lift eye assembly is retained by two (2) locking pins, one (1) at each end outboard side of the egress. Leveling is maintained by the lifting eye assembly rotating within the egress mounting. The lifting eye assembly rating will match the capacity rating of the aerial device.

### **AERIAL TURNTABLE MANSAYER™ BARS**

Yellow ManSaver™ bars will be installed at the aerial turntable.

### **WATER SYSTEM**

A waterway system will be provided consisting of the following components and features:

A 5.00" pipe will be connected to the water supply on one end and to a 5.00" internal diameter water swivel at the rotation point of the turntable. The water swivel will permit 360 degree continuous rotation of the aerial device.

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The 5.00" waterway swivel is to be routed through the rotation point up to the heel pin swivel. The heel pin swivel will allow the water to flow to the ladder pipe while elevating the aerial ladder from -10 degrees to 77 degrees. The heel pivot pin is not integral with the waterway swivel at any point. The design of the waterway will allow complete servicing of the waterway swivel without disturbing the heel pivot pin.

The integral telescopic water system will consist of a 4.50" diameter tube in the base section, a 4.00" diameter tube in the inner mid-section, a 3.50" diameter tube in the outer mid-section, and a 3.00" diameter tube in the fly section. The telescopic waterway will be constructed of anodized aluminum pipe.

The aerial will be capable of discharging up to 1000 gpm at 100 psi parallel to the ladder and 90 degrees to each side of center while maintaining the rated tip load.

The aerial will be capable of discharging between 1001 and up to 1500 gallons per minute at 100 psi parallel to the ladder and 40 degrees to each side of center while maintaining the rated tip load.

The master stream will be capable of flow up to 30 degrees above horizontal.

An adjustable pressure relief valve will be furnished to protect the aerial waterway from a pressure surge.

A 1.50" drain valve will be located at the lowest point of the waterway system.



### **WATERWAY SEALS**

The waterway seals will be of type-B PolyPak design, composed of nitroxile seal and a nitrile wiper, which together offer maximum stability and extrusion resistance on the waterway. The seal will be capable of withstanding pressures up to 2000 psi, temperatures in excess of 250 degrees Fahrenheit and have resistance to all foam generating solutions. The seals will be internally lubricated.

The waterway seals will have automatic centering guides constructed of synthetic thermalpolymer. The guides will provide positive centering of the extendible sections within each other and the base section to insure longer service life and smoother operation.

### **AERIAL MONITOR**

An Akron Model 3486 monitor with stow and deploy will be provided at the tip with a Akron 1500 gpm Model 5178. This monitor will allow for an additional 30 degrees of travel above horizontal at the aerial tip.

The monitor's functions will be controlled electrically from two (2) separate locations. One (1) control will be located at the control console and the other at the ladder tip.

There will be a courtesy light at the tip of the aerial to illuminate the controls.

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If the aerial has a quick-lock waterway, a limit switch will be provided to disable the extended vertical travel when the monitor is locked to the lower ladder section.

### **AERIAL VALVE MANIFOLD UNDER MONITOR**

An Akron Aerial Valve Manifold (AVM) valve and manifold will be provided at the aerial waterway monitor inlet. This configuration provides a valve to control flow through the monitor and an additional valve as a discharge connection for hose.

The AVM monitor flow control valve will be manually operated at the tip of the ladder with a slow close gear valve. The valve will have an integral automatic drain valve.

The Akron S2 left side discharge valve will have a 90 degree, 1/4 turn ball valve with 2.50" NH outlet threads. A 2.50" NH cap with chain will be provided.

A pressure relief valve will be installed to prevent incidental damage to the waterway system when both valves are closed.

### **AERIAL WATERWAY FLOW METER**

Waterway flow, including total water flowed, will be monitored by the microprocessor. An LCD display will be located at the turntable control station.

### **REAR INLET**

A 5.00" NST inlet to the aerial waterway will be provided at the rear of the apparatus. The inlet will have 5.00" aluminum plumbing. It will be furnished with a 5.00" chrome plated adapter and a 5.00" chrome plated, long handle cap.

### **WATERWAY LOCKING SYSTEM**

The aerial ladder waterway monitor will be capable of being positioned at either the fly section or at the next lower section of the ladder.

The monitor location will be changeable by the use of a single handle, located at the side of the ladder.

The handle, attached to a cam bracket, will simply be moved forward to lock the monitor at the fly section and back to lock it to the previous section.

There will be no pins to remove and reinstall.

The monitor will be operational at all times, regardless of its position, without connecting or disconnecting electrical lines.

### **TOOLS**

The following tools will be provided for retorquing of all specified bolts as recommended by the manufacturer:

- Torque Wrench
- All Required Extensions, Sockets and Adapters
- 4-to-1 Multiplier

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### **MANUALS**

Two (2) operator maintenance manuals and two (2) wiring diagrams pertaining to the aerial device will be provided with the apparatus at time of pick-up. Manuals will be in the English language.

### **INITIAL INSTRUCTION**

On initial delivery of the fire apparatus, the contractor will supply a qualified representative to demonstrate the apparatus and provide initial instruction to the fire department regarding the operation, care, and maintenance of the apparatus for a period of three (3) consecutive days.

### **LOOSE EQUIPMENT**

The following equipment will be furnished with the completed unit:

- One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit.

One (1) set of reflective emergency triangles will be provided.

### **NFPA LOOSE EQUIPMENT**

#### **NFPA Required Loose Equipment Provided by Fire Department**

The following loose equipment as outlined in NFPA 1900, 2024 edition, table 8.1 and CAN/ULC S515:2024 edition, section 5.2 will be provided by the fire department:

- One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 107, *American National Standard for High-Visibility Safety Apparel and Accessories*, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front.
- Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band.
- Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities.
- Four (4) ladder belts meeting the requirements of NFPA 2500.

#### **NFPA Loose Equipment That Should be Considered**

The following loose equipment as outlined in NFPA 1900, 2024 edition, appendix table A.8.4 (a) and CAN/ULC S515:2024 edition, section 5.2 should be considered:

- 800 ft (240 m) of 2.50" (65 mm) or larger fire hose
- 400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose
- One (1) handline nozzle, 200 gpm min
- Two (2) handline nozzles, 95 gpm min
- One (1) playpipe with shutoff and 1", 1.125", and 1.25" tips
- Four (4) SCBA apparatus

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- Four (4) SCBA spare cylinders
- One (1) first aid kit.
- Four (4) salvage covers, each a minimum size of 12 ft × 18 ft (3.6 m × 5.5 m).
- Four (4) combination spanner wrenches.
- Two (2) hydrant wrenches.
- One (1) double female 2.50" adapter with national hose (NH) thread.
- One (1) double male 2.50" adapter with national hose (NH) thread.
- One (1) rubber mallet, suitable for use on suction hose connections.
- One (1) 150 ft (45 m) light-use life safety rope meeting the requirements of NFPA 2500.
- One (1) 150 ft (45 m) general-use life safety rope meeting the requirements of NFPA 2500.
- One (1) automatic external defibrillator (AED).

**SOFT SUCTION HOSE PROVIDED BY FIRE DEPARTMENT**

Hose is not on the apparatus as manufactured. The fire department will provide suction or supply hose.

**DRY CHEMICAL EXTINGUISHER**

There will be One (1) extinguisher, 20 lb dry chemical extinguisher(s) provided.

**WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT**

The extinguisher is not on the apparatus as manufactured. The fire department will provide and mount the extinguisher.

**FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT**

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

**PICKHEAD AXE PROVIDED BY FIRE DEPARTMENT**

The axe is not on the apparatus as manufactured. The fire department will provide and mount the axe.

**PAINT PROCESS**

The exterior custom cab and body painting procedure will consist of a seven (7) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body will be thoroughly cleaned and prepared for painting. Imperfections on the exterior surfaces will be removed and sanded to a smooth finish. Exterior seams will be sealed before painting. Exterior surfaces that will not be painted include; chrome plating, polished stainless steel, anodized aluminum and bright aluminum treadplate.
2. Chemical Cleaning and Pretreatment - All surfaces will be chemically cleaned to remove dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well. The aluminum surfaces will be properly cleaned and treated using a high pressure, high temperature 4 step Acid Etch process. The steel and stainless surfaces will be properly cleaned and treated using a high temperature 3 step process specifically designed for steel or stainless. The chemical treatment converts the metal surface to a passive condition to help prevent corrosion.

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

3. Surfacer Primer - The Surfacer Primer will be applied to a chemically treated metal surface to provide a strong corrosion protective basecoat. A minimum thickness of 2 mils of Surfacer Primer is applied to surfaces that require a Critical aesthetic finish. The Surfacer Primer is a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded.
4. Finish Sanding - The Surfacer Primer will be sanded with a fine grit abrasive to achieve an ultra-smooth finish. This sanding process is critical to produce the smooth mirror like finish in the topcoat.
5. Sealer Primer - The Sealer Primer is applied prior to the Basecoat in all areas that have not been previously primed with the Surfacer Primer. The Sealer Primer is a two-component high solids urethane that goes on smooth and provides excellent gloss hold out when topcoated.
6. Basecoat Paint - Two coats of a high performance, two component high solids polyurethane basecoat will be applied. The Basecoat will be applied to a thickness that will achieve the proper color match. The Basecoat will be used in conjunction with a urethane clear coat to provide protection from the environment.
7. Clear Coat - Two (2) coats of Clear Coat will be applied over the Basecoat color. The Clear Coat is a two-component high solids urethane that provides superior gloss and durability to the exterior surfaces. Lap style and roll-up doors will be Clear Coated to match the body. Paint warranty for the roll-up doors will be provided by the roll-up door manufacturer.

After the cab and body are painted, the color will be verified to make sure that it matches the color standard. Electronic color measuring equipment will be used to compare the color sample to the color standard entered into the computer. Color specifications will be used to determine the color match. A Delta E reading will be used to determine a good color match within each family color.

All removable items such as brackets, compartment doors, door hinges, and trim will be removed and painted separately if required, to ensure paint behind all mounted items. Body assemblies that cannot be finish painted after assembly will be finish painted before assembly.

The paint finish quality levels for critical areas of the apparatus (cab front and sides, body sides and doors, and boom lettering panels) are to meet or exceed Cadillac/General Motors GMW15777 global paint requirements. Orange peel levels are to meet or exceed the #6 A.C.T. standard in critical areas. The manufacture's written paint standards will be available upon request.

### **Environmental Impact**

Contractor will meet or exceed all current state regulations concerning paint operations. Pollution control will include measures to protect the atmosphere, water and soil. Controls will include the following conditions:

- Topcoats and primers will be chrome and lead free.
- Metal treatment chemicals will be chrome free. The wastewater generated in the metal treatment process will be treated on-site to remove any other heavy metals.
- Particulate emission collection from sanding operations will have a 99.99 percent efficiency factor.

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

- Particulate emissions from painting operations will be collected by a dry filter or water wash process. If the dry filter is used, it will have an efficiency rating of 98 percent. Water wash systems will be 99.97 percent efficient.
- Water from water wash booths will be reused. Solids will be removed on a continual basis to keep the water clean.
- Paint wastes are disposed of in an environmentally safe manner.
- Empty metal paint containers will be recycled to recover the metal.
- Solvents used in clean-up operations will be recycled on-site or sent off-site for distillation and returned for reuse.

Additionally, the finished apparatus will not be manufactured with or contain products that have ozone depleting substances. Contractor will, upon demand, present evidence that the manufacturing facility meets the above conditions and that it is in compliance with his state EPA rules and regulations.

**CAB PAINT**

The cab will be painted #90 red.

**BODY PAINT**

The body will be painted to match the lower section of the cab.

**PAINT CHASSIS FRAME ASSEMBLY**

The chassis frame assembly will be finished with primer and gloss black paint before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

Components that are included with the chassis frame assembly that will be painted (unless otherwise stated in a secondary option) are:

- Frame rails
- Frame liners
- Cross members
- Axles
- Suspensions
- Steering gear
- Battery boxes
- Bumper extension weldment
- Frame extensions
- Body mounting angles
- Rear Body support substructure (front and rear)
- Pump house substructure
- Steel fuel tank
- Castings
- Individual piece parts used in chassis and body assembly

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

Components treated with epoxy E-coat protection prior to paint:

- Two (2) C-channel frame rails
- Two (2) frame liners

The E-coat process will meet the technical properties shown.

**AXLE HUB PAINT**

All axle hubs will be painted to match lower job color.

**COMPARTMENT INTERIOR PAINT**

The interior of all compartments will be painted with a gray spatter finish for ease of cleaning and to make it easier to touch up scratches and nicks.

**AERIAL DEVICE PAINT COLOR**

The aerial device paint procedure will consist of a six (6) step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the aerial device structural components above the rotation point will be thoroughly cleaned and mechanically shot-blasted to remove metal impurities and prepare the aerial for painting.
2. Primer/Surfacer Coats - A two (2) component urethane primer/surfacer will be applied to the mechanically shot-blasted metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface. All seams will be caulked with a two (2) component epoxy caulk before painting.
3. Hand Sanding - The primer/surfacer coat of the outer surfaces of the hand rails and base rails will be lightly sanded to a smooth finish.
4. Sealer Primer Coat - A two (2) component sealer primer coat will be applied over the sanded primer.
5. Topcoat Paint - Urethane base coat will be applied to opacity for correct color matching.
6. Clearcoat - Two (2) coats of an automotive grade two (2) component urethane will be applied.

Surfaces that will not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum treadplate.

All buy out components, such as monitor, nozzle, gauges, etc. will be supplied as received from the vendor.

Removable items such as brackets will be removed and painted separately to ensure paint coverage behind all mounted items.

The stabilizer beams, pedestal and torque box (including water tank cradle) will be treated with E-coat prior to painting to help provide resistance to corrosion and chemicals. The stabilizers and torque box will be painted black.

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

The aerial device components will be painted as follows using the aforementioned six (6) step finishing process:

- Aerial device ladder sections and extension cylinders: black 101
- Aerial turntable: black 101 with zinc rich primer
- Aerial control console: black 101
- Aerial lift cylinders: black 101
- Aerial egress: #90 red (will be a contrasting color to the aerial device)
- Aerial boom support: black 101

### **REFLECTIVE STRIPES**

Three (3) reflective stripes will be provided across the front of the vehicle and along the sides of the body. The reflective band will consist of a 1.00" gold stripe at the top with a 1.00" gap then a 6.00" black stripe with a 1.00" gap and a 1.00" gold stripe on the bottom.

The reflective band provided on the cab face will be at the headlight level.

### **REAR CHEVRON STRIPING**

There will be alternating chevron striping located on the rear-facing vertical surface of the apparatus. Covered surfaces will include the rear wall and aluminum doors. Roll up doors and stainless steel access doors will not be covered in chevron.

The colors will be red and fluorescent yellow green diamond grade.

Each stripe will be 6.00" in width.

This will meet the requirements of the current edition of NFPA 1901, which states that 50% of the rear surface will be covered with chevron striping.

### **REFLECTIVE STRIPE ON STABILIZERS**

There will be a 4.00" wide fluorescent yellow green diamond grade reflective stripe provided on the forward and rear facing side of all aerial stabilizers.

### **FOLDED RIBBON IN REFLECTIVE STRIPE**

There will be one (1) pair(s) of a folded type ribbon(s) added to the reflective stripe, with the location being as follows: front body compartment, one each side..

### **REFLECTIVE STRIPE OUTLINE**

A black outline will be applied on the top and the bottom of the reflective band. There will be two (2) set of outline stripes required.

### **CAB DOOR REFLECTIVE STRIPE**

A 6.00" x 16.00" fluorescent yellow green diamond grade reflective stripe will be provided across the interior of each cab door. The stripe will be located approximately 1.00" up from the bottom, on the door panel.

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

This stripe will meet the current edition of applicable NFPA standards.

### **FIRE APPARATUS PARTS MANUAL**

There will be one (1) custom parts manual(s) in USB flash drive format for the complete fire apparatus provided.

The manual(s) will contain the following:

- Job number
- Part numbers with full descriptions
- Table of contents
- Parts section sorted in functional groups reflecting a major system, component, or assembly
- Parts section sorted in alphabetical order
- Instructions on how to locate parts

Each manual will be specifically written for the chassis and body model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

### **Service Parts Internet Site**

The service parts information included in these manuals are also available on the Pierce website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly.

### **CHASSIS SERVICE MANUALS**

There will be one (1) chassis service manuals on USB flash drives containing parts and service information on major components provided with the completed unit.

The manual will contain the following sections:

- Job number
- Table of contents
- Troubleshooting
- Front Axle/Suspension
- Brakes
- Engine
- Tires
- Wheels
- Cab
- Electrical, DC
- Air Systems
- Plumbing
- Appendix

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

The manual will be specifically written for the chassis model being purchased. It will not be a generic manual for a multitude of different chassis and bodies.

**CHASSIS OPERATION MANUAL**

The chassis operation manual will be provided on two (2) USB flash drives. Manuals will be in the English language.

**ONE (1) YEAR MATERIAL AND WORKMANSHIP**

A Pierce basic apparatus limited warranty certificate, WA0008, is included with this proposal.

**ENGINE WARRANTY**

A Paccar five (5) year limited engine warranty will be provided. A limited warranty certificate is included with this proposal.

**STEERING GEAR WARRANTY**

A Sheppard **three (3) year** limited steering gear warranty will be provided. A copy of the warranty certificate will be submitted with this proposal.

**FIFTY (50) YEAR STRUCTURAL INTEGRITY**

The Pierce custom chassis frame only (does not include crossmembers) limited warranty certificate, WA0013, is included with this proposal.

**FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

The Pierce TAK-4 suspension limited warranty certificate, WA0050, is included with this proposal.

**SINGLE REAR AXLE FIVE (5) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

A Meritor™ Axle 5 year limited warranty will be provided.

**ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY**

A Meritor Wabco™ ABS brake system limited warranty certificate, WA0232, is included with this proposal.

**TEN (10) YEAR STRUCTURAL INTEGRITY**

The Pierce custom cab limited warranty certificate, WA0012, is included with this proposal.

**TEN (10) YEAR PRO-RATED PAINT AND CORROSION**

A Pierce cab limited pro-rated paint warranty certificate, WA0055, is included with this proposal.

**FIVE (5) YEAR MATERIAL AND WORKMANSHIP**

The Pierce Command Zone electronics limited warranty certificate, WA0014, is included with this proposal.

**CAMERA SYSTEM WARRANTY**

A Pierce fifty four (54) month warranty will be provided for the camera system.

**COMPARTMENT LIGHT WARRANTY**

The compartment lights will not offer an extended warranty.

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

**TRANSMISSION WARRANTY**

The transmission will have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty will be provided by Allison Transmission.

Note: The transmission cooler is not covered under any extended warranty you may be getting on your Allison Transmission. Please review your Allison Transmission warranty for coverage limitations.

**TRANSMISSION COOLER WARRANTY**

The transmission cooler will carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty will also be in effect for the first three (3) years of the warranty coverage and will not exceed \$10,000 per occurrence. A copy of the warranty certificate will be included with this proposal.

**WATER TANK WARRANTY**

A UPF poly water tank limited warranty certificate, WA0195, is included with this proposal.

**TEN (10) YEAR STRUCTURAL INTEGRITY**

The Pierce apparatus body limited warranty certificate, WA0009, is included with this proposal.

**ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY**

An AMDOR roll-up door limited warranty will be provided. The roll-up door will be warranted against manufacturing defects for a period of **ten (10) years**. A **five (5) year** limited warranty will be provided on painted roll up doors.

The limited warranty certificate, WA0185, is included with this proposal.

**PUMP WARRANTY**

The Waterous pump will be provided with a seven (7) year material and workmanship limited warranty.

A copy of the warranty certificate will be included with this proposal.

**TEN (10) YEAR PUMP PLUMBING WARRANTY**

The Pierce apparatus plumbing limited warranty certificate, WA0035, is included with this proposal.

**TWENTY (20) YEAR AERIAL DEVICE STRUCTURAL INTEGRITY WARRANTY**

The Pierce device limited warranty certificate, WA0052, is included with this proposal.

**AERIAL SWIVEL WARRANTY**

An Amity five (5) year limited swivel warranty will be provided. A copy of the warranty certificate will be included with this proposal.

**HYDRAULIC SYSTEM COMPONENTS WARRANTY**

Aerial hydraulic system components will be provided with a five (5) year material and workmanship limited warranty.

**HYDRAULIC SEAL WARRANTY**

Aerial hydraulic seals will be provided with a three (3) year material and workmanship limited warranty.

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

A copy of the warranty certificates is included with this proposal.

**AERIAL WATERWAY WARRANTY**

An Amity ten (10) year limited waterway warranty will be provided. A copy of the warranty certificate is included with this proposal.

**FOUR (4) YEAR PRO-RATED PAINT AND CORROSION**

A Pierce aerial device limited pro-rated paint warranty certificate, WA0047, is included with this proposal.

**TEN (10) YEAR PRO-RATED PAINT AND CORROSION**

A Pierce body limited pro-rated paint warranty certificate, WA0057, is included with this proposal.

**VEHICLE STABILITY CERTIFICATION**

The fire apparatus manufacturer will provide a certification stating the apparatus complies with NFPA 1900, current edition, section 7.14, Vehicle Stability. The certification is included with this proposal.

**ENGINE INSTALLATION CERTIFICATION**

The fire apparatus manufacturer will provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification will be provided at the time of delivery.

**POWER STEERING CERTIFICATION**

The fire apparatus manufacturer will provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification is included with this proposal.

**CAB INTEGRITY CERTIFICATION**

The fire apparatus manufacturer will provide a cab crash test certification with this proposal. The certification will state that a specimen representing the substantial structural configuration of the cab has been tested and certified by an independent third party test facility. Testing events will be documented with photographs, real-time and high-speed video, vehicle accelerometers, cart accelerometers, and a laser speed trap. The fire apparatus manufacturer will provide a state licensed professional engineer to witness and certify all testing events. Testing will meet or exceed the requirements below:

- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.
- European Occupant Protection Standard ECE Regulation No.29.
- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks.

**Side Impact**

The cab will be subjected to dynamic preload where a 14,320-lb moving barrier is slammed into the side of the cab at 5.50 mph, striking with an impact of 13,000 ft-lb of force. This test is part of the SAE J2422 test procedure and more closely represents the forces a cab will see in a rollover incident.

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

**Frontal Impact**

The same cab will withstand a frontal impact of 32,600 ft-lb of force using a moving barrier in accordance with SAE J2420.

**Additional Frontal Impact**

The same cab will withstand a frontal impact of 65,098 ft-lb of force using a moving barrier. (Twice the force required by SAE J2420)

**Roof Crush**

The cab will be subjected to a roof crush force of 22,500 lb. This value meets the ECE 29 criteria, and is equivalent to the front axle rating up to a maximum of ten (10) metric tons.

**Additional Roof Crush**

The same cab will be subjected to a roof crush force of 110,000 lbs. (Four and a half times the load criteria of ECE 29)

The same cab will withstand all tests without any measurable intrusion into the survival space of the occupant area.

**CAB DOOR DURABILITY CERTIFICATION**

Robust cab doors help protect occupants. Cab doors will survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder will certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear.

**WINDSHIELD WIPER DURABILITY CERTIFICATION**

Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers will survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles*. The bidder will certify that the wiper system design has been tested and that the wiper system has met these criteria.

**ELECTRIC WINDOW DURABILITY CERTIFICATION**

Cab window roll-up systems can cause maintenance problems if not designed for long service life. The window regulator design will complete 30,000 complete up-down cycles and still function normally when finished. The bidder will certify that sample doors and windows similar to those provided on the apparatus have been tested and have met these criteria without malfunction or significant component wear.

**SEAT BELT ANCHOR STRENGTH**

Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design will withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder will certify that each anchor design was pull tested to the required force and met the appropriate criteria.

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

### **SEAT MOUNTING STRENGTH**

Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design will be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder will certify, at time of delivery, that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria.

### **PERFORMANCE CERTIFICATIONS**

#### **Cab Air Conditioning**

Good cab air conditioning temperature and air flow performance keeps occupants comfortable, reduces humidity, and provides a climate for recuperation while at the scene. The cab air conditioning system will cool the cab from a heat-soaked condition at 100 degrees Fahrenheit to an average of 78 degrees Fahrenheit in 30 minutes. The bidder will certify that a substantially similar cab has been tested and has met these criteria.

#### **Cab Defroster**

Visibility during inclement weather is essential to safe apparatus performance. The defroster system will clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure And Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder will certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria.

#### **Cab Auxiliary Heater**

Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. An auxiliary cab heater will warm the cab 77 degrees Fahrenheit from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder will certify, at time of delivery, that a substantially similar cab has been tested and has met these criteria.

### **AMP DRAW REPORT**

The bidder will provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus will provide the following:

- Documentation of the electrical system performance tests.
- A written load analysis, which will include the following:
  - The nameplate rating of the alternator.
  - The alternator rating under the conditions specified per:
    - Current edition of applicable NFPA standards.
  - The minimum continuous load of each component that is specified per:
    - Current edition of applicable NFPA standards.
  - Additional loads that, when added to the minimum continuous load, determine the total connected load.

Specifications For: One (1) Pierce Stock Program  
Enforcer 107' Ascendent Single Rear Axle Quint Aerial

- Each individual intermittent load.

All of the above listed items will be provided by the bidder per the current edition of applicable NFPA standards.



## AGENDA SUMMARY REPORT

**SUBJECT:** Conduct a Public Hearing to Solicit Public Comment; and Consider Authorizing Staff to Proceed with Submittal of an Application to the United States Department of Agriculture (USDA) for a New Pierce 107-foot Single Rear Axle Aerial Apparatus (Ladder Engine) for the Ukiah Valley Fire Authority.

**DEPARTMENT:** Community  
Development

**PREPARED BY:** Andrea Trincado, Grants Manager

**PRESENTER:** Jim Robbins, Housing and Grants Manager;  
Douglas Hutchinson, Fire Chief

**ATTACHMENTS:**

1. Notice of Funding Opportunity #RUS-23-WATER-0009
2. GoldenStateQuote\_PierceQuint107LadderApparatus
3. Aerial DAS-6 Schematic
4. Specifications - Enforcer Ascendant 107' Ladder Quint

**Summary:** Council will conduct a public hearing to solicit public comment; and authorize Staff to submit an application to the United States Department of Agriculture (USDA) to fund the purchase of a new Pierce 107-foot Single Rear Axle Aerial Apparatus (Ladder Engine) for the Ukiah Valley Fire Authority.

**Background:** The USDA Community Facilities Calendar Year 2022 Disaster Water Grant Program provides funding to rural communities to repair, replace, or improve essential community facilities impacted by federally declared disasters. Funding is available on a first-come, first-served basis for communities affected by disaster events occurring during calendar year 2022.

Because the City of Ukiah has a population of less than 20,000 residents, it is eligible for up to 75% in USDA grant funding, with a 25% local match requirement. Over the past two years, the Community Development Department Grants Division has secured \$547,500 through this program for the purchase of a loader and grader, with the grader award pending. Additional funding remains available for eligible disaster recovery projects.

The Ukiah Valley Fire Authority (UVFA) currently operates a single ladder truck, a 2009 Pierce Quint with a 75-foot aerial ladder. At 17 years old, the apparatus has exceeded the National Fire Protection Association (NFPA) recommended frontline service life and is approaching replacement age. Increasing mechanical issues have affected reliability, at times rendering the unit unavailable during emergency incidents. As the only aerial apparatus serving the Ukiah Valley, this engine provides critical capabilities for structure fires, roof ventilation, elevated water application, and technical rescues, including accessing rooftops and assisting individuals during flood events. Reliance on a single unit creates operational risk during maintenance, mechanical failure, or simultaneous emergency incidents, leaving the community vulnerable when aerial response is unavailable.

**Discussion:** Staff is requesting authorization from the City Council to apply for funding under the USDA Community Facilities Disaster Grant Program, which would improve emergency response capability and resilience to fire and flood-related disasters. If awarded, the grant would fund the replacement of the Ukiah Valley Fire Authority's aging aerial ladder apparatus with a new fire engine equipped with a 107-foot aerial ladder. The City qualifies for this funding due to impacts from the December 2022 and January 2023 storm

events, which caused localized flooding and debris accumulation at several City facilities.

The proposed apparatus will significantly enhance emergency response capability by increasing aerial reach, improving access to multi-story structures, and enabling rescues where ground access is limited—particularly during flood events. The expanded reach and elevated water application will also allow firefighters to more effectively control incidents, helping reduce risk to life, limit property damage, and protect critical infrastructure.

Currently, the Ukiah Valley Fire Authority relies on a single ladder apparatus to serve the entire Ukiah Valley, creating operational risk during maintenance, mechanical failure, or simultaneous incidents. The addition of a new apparatus will introduce critical redundancy by allowing the existing unit to be retained in reserve status, ensuring continuity of service during high-demand or emergency conditions. Overall, the proposed equipment will strengthen the City’s ability to respond to fire and flood-related emergencies, enhance community resilience, and improve protection of homes, businesses, and critical infrastructure.

If awarded, the USDA Community Facilities Calendar Year 2022 Disaster Repair Grant would provide an estimated \$1,554,805 toward the total project cost of \$2,073,075, with the Ukiah Valley Fire Authority responsible for the remaining \$518,270 in matching funds, which will come from a variety of fire-specific sources. Staff has prepared a funding strategy for the match and has engaged the Ukiah Valley Fire Authority governing body for consideration and consultation. Funding for the match will be budgeted and available when needed. Staff will return to Council if a budget amendment is needed, but at this time it is not expected.

The following documents are provided for Council review: Attachment 1 - Notice of Funding Opportunity, Attachment 2 - Golden State Quote for Pierce Quint 107' Ladder Aerial Apparatus, Attachment 3 - Schematic of the Pierce Quint 107' Ladder Aerial Apparatus, Attachment 4 - Specifications for the Pierce Quint 107' Ladder Aerial Apparatus.

Staff requests Council conduct a public hearing to solicit public comment; and authorize Staff to submit an application to the United States Department of Agriculture (USDA) to fund the purchase of a new Pierce 107-foot Single Rear Axle Aerial Apparatus (Ladder Engine) for the Ukiah Valley Fire Authority.

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**Recommended Action:** Conduct a public hearing to solicit public comment; and authorize Staff to submit an application to the United States Department of Agriculture (USDA) to fund the purchase of a new Pierce 107-foot Single Rear Axle Aerial Apparatus (Ladder Engine) for the Ukiah Valley Fire Authority.

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**BUDGET AMENDMENT REQUIRED:** Not at this time.

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**CURRENT BUDGET AMOUNT:** N/A

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**PROPOSED BUDGET AMOUNT:** N/A

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**FINANCING SOURCE:** USDA grant and UVFA matching funds

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**REVENUE: No GRANT: Yes**

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**PREVIOUS CONTRACT/PURCHASE ORDER NO.:** N/A

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**COORDINATED WITH:** Douglas Hutchinson, Ukiah Valley Fire Authority Fire Chief; Traci Boyd, Senior Management Analyst; Dave Kirch, Fleets Manager

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**STRATEGIC PLAN (SP): SP 2B** - Identify and/or develop funding for essential and vital infrastructure for the long-term.

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**GENERAL PLAN ELEMENTS (GP): GP-A6** - Safety Element.

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Approved:   
Sage Sangiacomo, City Manager



# AGENDA SUMMARY REPORT

**SUBJECT:** Financial Report and Disbursements for February 1, 2026, through March 30, 2026.

**DEPARTMENT:** Fire

**PREPARED BY:** Eric Singleton, Battalion Chief

**PRESENTER:** Eric Singleton, Battalion Chief

**ATTACHMENTS:**

- 1. UVFA financial Report & disbursements

**Summary:**The Ukiah Valley District Board will review the current financial report and the disbursements for February and March 2026.

**Background:**All District and City accounts listed in the financial report include funds from the City of Ukiah General Fund (Fund-100), City of Ukiah Prop. 172 Fund (Fund-253), the City and District shared fund (Fund-105), Ukiah Valley District General Fund (Fund-915), Ukiah Valley Fire District Prop. 172 fund (Fund-916), Ukiah Valley Fire District Measure B fund (Fund-917), Ukiah Valley Fire Mitigation Fees fund (Fund-918). Payments made during February and March are summarized in the Disbursements Report (Attachment 1).

**Discussion:**As part of ongoing efforts to improve communication and transparency, monthly disbursements are now routinely included within the Chief's Report for inclusion in the Ukiah Valley Fire District Board agenda packet.

**Recommended Action:**Receive financial report and disbursements for February 1, 2026, through March 20, 2026.

**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:** Doug Hutchison, Fire Chief

Approved:   
Doug Hutchison, Fire Chief

# UVFA FINANCIAL REPORT

## Legend: Fund Descriptions

Fund	Description
100	City General Fund (10000000 Fund Level; 10021 Operational)
105	UVFA Shared Fund (10500000 Fund Level; 10521 Fire Operations; 10523 Fire Inspection Office)
253	City Prop. 172 Fund (253000000 Fund Level; 25321 Operational)
915	District General Fund (915000000 Fund Level; 91521 Operational)
916	District Prop. 172 (916000000 Fund Level; 91621 Operational)
917	District Measure B Fund (917000000 Fund Level; 91721 Operational)
918	District Mitigation Fund (918000000 Fund Level; 91821 Operational)

## City General Fund (Fund-100)

Org	Object	Project	Description	2026 Original Budget	2026 Revised Budget	2026 Encum/Req	2026 Actual
10000000	74500	V2671	CAPITAL LEASE PRINCIPAL	\$ 22,980.18	\$ 22,980.18	\$ -	\$ 22,980.18
10000000	74500	17029	CAPITAL LEASE PRINCIPAL	\$ 121,016.04	\$ 121,016.04	\$ -	\$ 60,132.81
10000000	74501	V2671	CAPITAL LEASE INTEREST	\$ 2,763.82	\$ 2,763.82	\$ -	\$ 2,763.82
10000000	74501	17029	CAPITAL LEASE INTEREST	\$ 6,943.44	\$ 6,943.44	\$ -	\$ 3,846.93
10021000	59105		CONTRA CONTRIBUTION TO 105	\$ 3,116,789.00	\$ 3,116,789.00	\$ -	\$ -
10021210	74500		CAPITAL LEASE PAYMENTS	\$ 150,000.00	\$ 150,000.00	\$ -	\$ -
10021210	80100	18487	MACHINERY & EQUIPMENT	\$ 32,000.00	\$ 32,000.00	\$ -	\$ -
10021210	80100	V2543	MACHINERY & EQUIPMENT	\$ -	\$ 13,100.69	\$ -	\$ 13,100.69
<b>TOTAL:</b>				<b>\$ 3,452,492.48</b>	<b>\$ 3,465,593.17</b>	<b>\$ -</b>	<b>\$ 102,824.43</b>

## UVFA Shared Fund (Fund-105)

Org	Object	Project	Description	2026 Original Budget	2026 Revised Budget	2026 Encum/Req	2026 Actual
10500000			ENDING FUND BALANCE 2025	\$ (1,835,984.79)	\$ (1,835,984.79)	\$ -	\$ (1,835,984.79)
10500000	51230		WORKERS COMP REBATE	\$ (48,593.16)	\$ (48,593.16)	\$ -	\$ -
10500000	70102	18360	BOND INTEREST EXPENSE	\$ 126,053.00	\$ 126,053.00	\$ -	\$ -
10500000	70103		LOAN INTEREST	\$ -	\$ -	\$ -	\$ 48,485.95
10500000	70201		LOAN PRINCIPAL PAYMENTS	\$ 263,500.00	\$ 263,500.00	\$ -	\$ 76,413.25
10500000	70202	18360	BOND PRINCIPAL PAYMENTS	\$ 100,296.00	\$ 100,296.00	\$ -	\$ -
10500000	90100		LOAN PROCEEDS	\$ (2,000,000.00)	\$ (2,000,000.00)	\$ -	\$ -
10500000	91710		TRANSFER FROM FUND 710	\$ (263,500.00)	\$ (263,500.00)	\$ -	\$ -
10500000	94000		RESERVE FOR ENCUMBRANCES	\$ 30,784.00	\$ 30,784.00	\$ -	\$ -
10500000	95106		TRANSFER TO 106	\$ 207,285.00	\$ 207,285.00	\$ -	\$ -
10500000	95130		TRANSFER TO UAL DEBT SERVICE	\$ 18,169.00	\$ 18,169.00	\$ -	\$ -
10500021	51213		CONTRA UAL	\$ (226,349.00)	\$ (226,349.00)	\$ -	\$ (226,349.00)

# UVFA FINANCIAL REPORT

10514000	52150		LEGAL SERVICES/EXPENSES	\$ -	\$ -	\$ -	\$ 2,835.67
10521000	59105		CITY GF CONTRIBUTION TO UVFA	\$ (3,116,789.00)	\$ (3,116,789.00)	\$ -	\$ -
10521210	20550		ACCRUED PAYROLL	\$ -	\$ -	\$ -	\$ 372.71
10521210	44521		SALE OF FIRE REPORTS	\$ (100.00)	\$ (100.00)	\$ -	\$ (40.00)
10521210	44530		MISCELLANEOUS FIRE	\$ (10,000.00)	\$ (10,000.00)	\$ -	\$ (13,160.00)
10521210	44560		OES RESPONSE REIMBRSMNT	\$ (84,943.00)	\$ (84,943.00)	\$ -	\$ (11,457.08)
10521210	44830		REIMBURSABLE JOBS	\$ (12,000.00)	\$ (12,000.00)	\$ -	\$ (7,407.44)
10521210	46000	18428	INTERFUND SERVICES PROVIDED	\$ (207,285.00)	\$ (207,285.00)	\$ -	\$ -
10521210	46114		INTEREST FROM LOAN	\$ (6,611.00)	\$ (6,611.00)	\$ -	\$ (5,906.12)
10521210	47110		UVFD CONTRIBUTION TO UVFA	\$ (2,790,536.00)	\$ (2,790,536.00)	\$ -	\$ -
10521210	48110		MISCELLANEOUS RECEIPTS	\$ (3,000.00)	\$ (3,000.00)	\$ -	\$ (2,718.73)
10521210	51110		REGULAR SALARIES & WAGES	\$ 2,245,603.00	\$ 2,251,309.83	\$ -	\$ 1,641,395.86
10521210	51120		NON-REGULAR SALARIES & WAGES	\$ -	\$ -	\$ -	\$ 2,032.58
10521210	51130		OVERTIME SALARIES & WAGES	\$ 284,943.00	\$ 284,943.00	\$ -	\$ 418,163.86
10521210	51210		RETIREMENT (PERS)	\$ 403,622.00	\$ 404,475.75	\$ -	\$ 283,007.87
10521210	51211		PERS UNFUNDED LIABILITY	\$ 331,708.00	\$ 331,708.00	\$ -	\$ 331,708.00
10521210	51220		INSURANCE	\$ 394,128.00	\$ 394,128.00	\$ -	\$ 307,340.02
10521210	51230		WORKERS COMP	\$ 149,814.00	\$ 150,185.88	\$ -	\$ 109,032.40
10521210	51240		MEDICARE	\$ 31,736.00	\$ 31,814.25	\$ -	\$ 28,623.83
10521210	51260		FICA	\$ -	\$ -	\$ -	\$ (43.79)
10521210	51270		UNIFORM ALLOWANCE	\$ 1,000.00	\$ 1,000.00	\$ -	\$ 744.48
10521210	51290		CELL PHONE STIPEND	\$ 2,664.00	\$ 2,664.00	\$ -	\$ 2,037.64
10521210	52100		CONTRACTUAL SERVICES	\$ 241,450.00	\$ 247,951.73	\$ 6,501.73	\$ 101,628.85
10521210	52150		LEGAL SERVICES/EXPENSES	\$ 2,000.00	\$ 2,000.00	\$ -	\$ 217.73
10521210	52180		SECURITY SERVICES	\$ 500.00	\$ 500.00	\$ -	\$ 167.75
10521210	52181		VOLUNTEER EXPENSES	\$ 21,000.00	\$ 21,000.00	\$ 5,000.00	\$ 8,731.61
10521210	52521		LIABILITY INSURANCE PREMIUM	\$ 18,500.00	\$ 18,500.00	\$ -	\$ 18,500.00
10521210	54100		SUPPLIES	\$ 22,000.00	\$ 22,000.00	\$ -	\$ 13,409.13
10521210	54101		POSTAGE	\$ 500.00	\$ 500.00	\$ -	\$ 405.74
10521210	54102		SMALL TOOLS	\$ 30,000.00	\$ 40,938.86	\$ 2,197.31	\$ 28,206.74
10521210	54106		SPECIALTY SUPPLIES	\$ 40,000.00	\$ 52,576.40	\$ 419.11	\$ 25,040.30
10521210	54107	18356	EMS SUPPLIES	\$ -	\$ -	\$ -	\$ 785.52
10521210	54161		BACKGROUND & PHYSICALS	\$ 15,000.00	\$ 15,432.00	\$ 10,332.00	\$ 5,063.50
10521210	54167		EMPLOYEE DEVELOPMENT	\$ 5,160.00	\$ 5,160.00	\$ -	\$ 1,117.02
10521210	54320	18271	SOFTWARE	\$ -	\$ 6,272.43	\$ -	\$ -
10521210	54320		SOFTWARE	\$ 30,775.00	\$ 30,775.00	\$ -	\$ 9,128.33
10521210	54330	18271	COMPUTER AND TECHNOLOGY	\$ -	\$ 944.00	\$ -	\$ -
10521210	54330		COMPUTER AND TECHNOLOGY	\$ 2,500.00	\$ 2,500.00	\$ -	\$ 2,618.43
10521210	54500		EQUIP RENTS AND LEASES	\$ 8,500.00	\$ 8,500.00	\$ -	\$ 7,327.60
10521210	55100		TELEPHONE	\$ 16,000.00	\$ 16,000.00	\$ -	\$ 4,941.88
10521210	55210		UTILITIES	\$ 17,957.00	\$ 17,957.00	\$ -	\$ 10,179.48

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10521210	56120		EQUIPMENT MAINTENANCE & REPAIR	\$ 20,000.00	\$ 20,000.00	\$ -	\$ 7,612.24
10521210	56130	V6856	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 156.08
10521210	56130	V6861	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 238.49
10521210	56130	V6807	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 398.53
10521210	56130	V6800	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 472.44
10521210	56130	V6852	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 826.56
10521210	56130	V6863	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 1,008.66
10521210	56130	V6892	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 1,050.09
10521210	56130	V6882	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 1,744.16
10521210	56130	V6806	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 2,348.59
10521210	56130	V6881	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 6,498.20
10521210	56130	V6883	EXTERNAL SERVICES	\$ -	\$ -	\$ -	\$ 8,926.81
10521210	56130		EXTERNAL SERVICES	\$ 80,000.00	\$ 80,000.00	\$ -	\$ 58,985.60
10521210	56210		FUEL & FLUIDS	\$ 75,000.00	\$ 75,000.00	\$ -	\$ 55,489.65
10521210	56300		BUILDING MAINT. & REPAIR	\$ 12,000.00	\$ 12,000.00	\$ -	\$ 7,077.53
10521210	57100		LEARNING AND DEVELOPMENT	\$ 26,250.00	\$ 26,250.00	\$ -	\$ 20,560.85
10521210	57300		MEMBERSHIPS & SUBSCRIPTIONS	\$ 4,200.00	\$ 4,200.00	\$ -	\$ 1,610.00
10521210	61200		PURCHASING ALLOCATION	\$ 26,235.00	\$ 26,235.00	\$ -	\$ 8,167.14
10521210	61300		BILLING & COLLECTION ALLOCATIO	\$ 3,178.00	\$ 3,178.00	\$ -	\$ 1,428.32
10521210	61420		BUILDING MAINTENANCE ALLOCATIO	\$ 413,179.00	\$ 413,179.00	\$ -	\$ 185,139.30
10521210	61422		IT ALLOCATION	\$ 164,989.00	\$ 164,989.00	\$ -	\$ 81,540.39
10521210	61500		INSURANCE ALLOCATION	\$ 98,419.00	\$ 98,419.00	\$ -	\$ 92,311.88
10521210	61600		GARAGE ALLOCATION	\$ 99,827.00	\$ 99,827.00	\$ -	\$ 63,206.31
10521210	61700		DISPATCH	\$ 214,060.00	\$ 214,060.00	\$ -	\$ 115,585.81
10521210	62100		ADMIN & OVERHEAD ALLOCATION	\$ 355,653.00	\$ 355,653.00	\$ -	\$ 203,146.09
10521210	80100	V2804	MACHINERY & EQUIPMENT	\$ 1,000,000.00	\$ 1,000,000.00	\$ 973,728.99	\$ -
10521210	80100	V2805	MACHINERY & EQUIPMENT	\$ 1,000,000.00	\$ 1,000,000.00	\$ 973,729.00	\$ -
10523600	44170		PLAN CHECK FEES	\$ (12,000.00)	\$ (12,000.00)	\$ -	\$ -
10523600	47110		UVFD CONTRIBUTION FOR PLAN CHK	\$ (130,000.00)	\$ (130,000.00)	\$ -	\$ -
10523600	51110		REGULAR SALARIES & WAGES	\$ 146,280.00	\$ 148,957.35	\$ -	\$ 99,829.71
10523600	51130		OVERTIME SALARIES & WAGES	\$ -	\$ -	\$ -	\$ 121.42
10523600	51210		RETIREMENT (PERS)	\$ 16,916.00	\$ 17,230.90	\$ -	\$ 11,542.33
10523600	51211		PERS UNFUNDED LIABILITY	\$ 21,571.00	\$ 21,571.00	\$ -	\$ 21,571.00
10523600	51220		INSURANCE	\$ 32,000.00	\$ 32,000.00	\$ -	\$ 21,776.66
10523600	51230		WORKERS COMP	\$ 9,524.00	\$ 9,698.80	\$ -	\$ 6,476.14
10523600	51240		MEDICARE	\$ 2,017.00	\$ 2,053.15	\$ -	\$ 1,372.19
10523600	51290		CELL PHONE STIPEND	\$ 211.00	\$ 211.00	\$ -	\$ 158.32
10523600	52100		CONTRACTUAL SERVICES	\$ 13,550.00	\$ 13,550.00	\$ -	\$ 3,739.79
10523600	54100		SUPPLIES	\$ 1,300.00	\$ 1,300.00	\$ -	\$ 186.20

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10523600	54167		EMPLOYEE DEVELOPMENT	\$ 240.00	\$ 240.00	\$ -	\$ -
10523600	54320		SOFTWARE	\$ 7,625.00	\$ 7,625.00	\$ -	\$ -
10523600	54330		COMPUTER AND TECHNOLOGY	\$ 1,000.00	\$ 1,000.00	\$ -	\$ -
10523600	55100		TELEPHONE	\$ 2,300.00	\$ 2,300.00	\$ -	\$ 717.91
10523600	56120		EQUIPMENT MAINTENANCE & REPAIR	\$ 1,000.00	\$ 1,000.00	\$ -	\$ -
10523600	56130		EXTERNAL SERVICES	\$ 1,000.00	\$ 1,000.00	\$ -	\$ -
10523600	56210		FUEL & FLUIDS	\$ 1,200.00	\$ 1,200.00	\$ -	\$ 1,541.53
10523600	57100		LEARNING AND DEVELOPMENT	\$ 5,000.00	\$ 5,000.00	\$ -	\$ 1,810.12
10523600	57300		MEMBERSHIPS & SUBSCRIPTIONS	\$ 1,773.00	\$ 1,773.00	\$ -	\$ 325.00
10523600	61200		PURCHASING ALLOCATION	\$ 1,348.00	\$ 1,348.00	\$ -	\$ 420.18
10523600	61422		IT ALLOCATION	\$ 12,599.00	\$ 12,599.00	\$ -	\$ 6,226.72
10523600	61500		INSURANCE ALLOCATION	\$ 2,989.00	\$ 2,989.00	\$ -	\$ 2,803.53
10523600	62100		ADMIN & OVERHEAD ALLOCATION	\$ 22,095.00	\$ 22,095.00	\$ -	\$ 12,620.40
<b>TOTAL:</b>				<b>\$ (1,788,015.95)</b>	<b>\$ (1,740,136.62)</b>	<b>\$ 1,971,908.14</b>	<b>\$ 2,497,751.72</b>

## City Prop. 172 Fund (Fund-253)

Org	Object	Project	Description	2026 Original Budget	2026 Revised Budget	2026 Encum/Req	2026 Actual
25300000	46110		INTEREST ON INVESTMENTS	\$ -	\$ -	\$ -	\$ (122.29)
25300000	62100		ADMIN & OVERHEAD ALLOCATION	\$ -	\$ -	\$ -	\$ -
25300000	70101	18204	LOAN PAYMENTS MADE	\$ 34,295.33	\$ 34,295.33	\$ -	\$ 17,045.15
25300000	70103	18204	LOAN INTEREST	\$ 4,586.82	\$ 4,586.82	\$ -	\$ 2,395.93
25320210	41230		PROP. 172 PUBLIC SAFETY SALES	\$ (55,000.00)	\$ (55,000.00)	\$ -	\$ (28,196.86)
25321210	47110		CONTRIBUTIONS & DONATIONS	\$ (43,041.00)	\$ (43,041.00)	\$ -	\$ -
25321210	59100		PROPERTY TAXES PAID	\$ 4,158.00	\$ 4,158.00	\$ -	\$ -
<b>TOTAL:</b>				<b>\$ (55,000.85)</b>	<b>\$ (55,000.85)</b>	<b>\$ -</b>	<b>\$ (8,878.07)</b>

## District General Fund (Fund-915)

Org	Object	Project	Description	2026 Original Budget	2026 Revised Budget	2026 Encum/Req	2026 Actual
91500000	10101		ENDING FUND BALANCE 2025	\$ 1,585,379.09	\$ 1,585,379.09	\$ -	\$ 1,585,379.09
91521000	59105		CONTRIBUTIONS TO OTHER AGENCY	\$ 2,695,645.00	\$ 2,695,645.00	\$ -	\$ -
91521400	41110		SECURED PROPERTY TAX	\$ (439,687.00)	\$ (439,687.00)	\$ -	\$ (255,353.57)
91521400	41120		UNSECURED PROPERTY TAX	\$ (12,000.00)	\$ (12,000.00)	\$ -	\$ (10,409.95)
91521400	41130		SUPPLEMENTAL PROPERTY TAX	\$ (5,000.00)	\$ (5,000.00)	\$ -	\$ -
91521400	41452		SPECIAL PROPERTY TAX	\$ (1,550,000.00)	\$ (1,550,000.00)	\$ -	\$ (779,623.07)
91521400	41454		2020 MEASURE D&E-TOT	\$ (15,000.00)	\$ (15,000.00)	\$ -	\$ (23,350.23)
91521400	43130		HOME OWNERS PROP TAX RELIEF	\$ (2,000.00)	\$ (2,000.00)	\$ -	\$ (2,839.42)
91521400	44170		PLAN CHECK FEES	\$ (140,000.00)	\$ (140,000.00)	\$ -	\$ (98,275.75)

# UVFA FINANCIAL REPORT

91521400	44521		SALE OF FIRE REPORTS	\$ (100.00)	\$ (100.00)	\$ -	\$ (5.00)
91521400	45105		COUNTY MEAS P (2022)	\$ (1,150,000.00)	\$ (1,150,000.00)	\$ -	\$ (599,237.84)
91521400	46110		INTEREST ON INVESTMENTS	\$ (2,000.00)	\$ (2,000.00)	\$ -	\$ (1,048.43)
91521400	51211		PERS UNFUNDED LIABILITY	\$ 265,807.00	\$ 265,807.00	\$ -	\$ 265,807.00
91521400	52100		CONTRACTUAL SERVICES	\$ 74,400.00	\$ 76,400.00	\$ 2,000.00	\$ -
91521400	52154		ELECTION EXPENSE	\$ 2,000.00	\$ 2,000.00	\$ -	\$ -
91521400	52533		UVFA RETIREE HEALTH INS	\$ 2,000.00	\$ 2,000.00	\$ -	\$ 1,437.98
91521400	59101		FEES	\$ 35,000.00	\$ 35,000.00	\$ -	\$ 5,559.86
91521400	61200		PURCHASING ALLOCATION	\$ 6,498.00	\$ 6,498.00	\$ -	\$ 2,022.75
91521400	62100		ADMIN & OVERHEAD ALLOCATION	\$ 24,257.00	\$ 24,257.00	\$ -	\$ 13,855.15
91521400	70103		LOAN INTEREST	\$ 1,772.10	\$ 1,772.10	\$ -	\$ 1,771.84
91521400	70201		LOAN PRINCIPAL PAYMENTS	\$ 7,108.50	\$ 7,108.50	\$ -	\$ 7,108.28
<b>TOTAL:</b>				<b>\$ 1,384,079.69</b>	<b>\$ 1,386,079.69</b>	<b>\$ 2,000.00</b>	<b>\$ 112,798.69</b>

## District Prop. 172 (Fund-916)

Org	Object	Project	Description	2026 Original Budget	2026 Revised Budget	2026 Encum/Req	2026 Actual
91600000			ENDING FUND BALANCE 2025	\$ (2,965.85)	\$ (2,965.85)	\$ -	\$ (2,965.85)
91621000	59105	18204	CONTRIBUTIONS TO OTHER AGENCY	\$ 43,041.00	\$ 43,041.00	\$ -	\$ -
91621000	59105		CONTRIBUTIONS TO OTHER AGENCY	\$ 61,891.00	\$ 61,891.00	\$ -	\$ -
91621400	41230		PROP. 172 PUBLIC SAFETY SALES	\$ (105,000.00)	\$ (105,000.00)	\$ -	\$ (58,870.68)
91621400	46110		INTEREST ON INVESTMENTS	\$ -	\$ -	\$ -	\$ (88.66)
<b>TOTAL:</b>				<b>\$ (3,033.85)</b>	<b>\$ (3,033.85)</b>	<b>\$ -</b>	<b>\$ (61,925.19)</b>

## District Measure B Fund (Fund-917)

Org	Object	Project	Description	2026 Original Budget	2026 Revised Budget	2026 Encum/Req	2026 Actual
91700000			ENDING FUND BALANCE 2025	\$ (474,188.66)	\$ (474,188.66)	\$ -	\$ (474,188.66)
91721000	59105		CONTRIBUTIONS TO OTHER AGENCY	\$ 163,000.00	\$ 163,000.00	\$ -	\$ -
91721400	41451		MEASURE B SPECIAL TAX	\$ (310,000.00)	\$ (310,000.00)	\$ -	\$ (155,924.61)
91721400	46110		INTEREST ON INVESTMENTS	\$ -	\$ -	\$ -	\$ (4,115.81)
91721400	59101		FEES	\$ 10,000.00	\$ 10,000.00	\$ -	\$ -
91721400	62100		ADMIN & OVERHEAD ALLOCATION	\$ 635.00	\$ 635.00	\$ -	\$ 362.91
91721400	80220	18337	BUILDING IMPROVEMENTS	\$ 110,000.00	\$ 110,000.00	\$ -	\$ -
<b>TOTAL:</b>				<b>\$ (500,553.66)</b>	<b>\$ (500,553.66)</b>	<b>\$ -</b>	<b>\$ (633,866.17)</b>

# UVFA FINANCIAL REPORT

## Distict Mitigation Fund (Fund-918)

Org	Object	Project	Description	2026 Original Budget	2026 Revised Budget	2026 Encum/Req	2026 Actual
91800000			ENDING FUND BALANCE 2025	\$ (120,032.40)	\$ (120,032.40)	-	\$ (120,032.40)
91821400	46110		INTEREST ON INVESTMENTS	\$ -	\$ -	-	\$ (1,519.60)
91821400	54110	E6161	SMALL VEHICLES AND	\$ -	\$ 9,805.30	-	\$ 9,805.30
91821400	70103		LOAN INTEREST	\$ 4,134.90	\$ 4,134.90	-	\$ 4,134.28
91821400	70201		LOAN PRINCIPAL PAYMENTS	\$ 16,586.50	\$ 16,586.50	-	\$ 16,586.01
91821400	80100	E1001	MACHINERY & EQUIPMENT	\$ -	\$ 17,891.79	-	\$ 17,891.55
91821400	80100	V2371	MACHINERY & EQUIPMENT	\$ -	\$ 22,385.64	-	\$ 22,385.64
91821402	44170		PLAN CHECK FEES	\$ (65,000.00)	\$ (65,000.00)	-	\$ (136,920.54)
<b>TOTAL:</b>				<b>-164311</b>	<b>-114228.27</b>	<b>0</b>	<b>-187669.76</b>

# UVFA FINANCIAL REPORT

## Disbursements Report: February 1 to March 20, 2026

VENDOR	DESCRIPTION	INVOICE TOTAL	ORG	OBJECT DESCRIPTION	LINE ITEM AMOUNT	TOTAL AMOUNT
CALFIRE	DISPATCHING SERVICES - 3 YEAR	\$ 39,496.59	10521210-52100	CONTRACTUAL SERVICES	\$ 19,748.30	\$ 39,496.59
LOCALITY MEDIA INC	TABLET COMMAND INTEGRATION 1/31/26-	\$ 220.00	10521210-52100	CONTRACTUAL SERVICES	\$ 220.00	\$ 220.00
ADVANCE SECURITY	FIRE SYSTEM ALARM: 1301 TALMAGE RD	\$ 30.50	10521210-52180	SECURITY SERVICES	\$ 15.25	\$ 61.00
ADVANCE SECURITY	SECURITY MONITORING - TALMAGE	\$ 30.50	10521210-52180	SECURITY SERVICES	\$ 15.25	\$ 61.00
AMAZON CAPITAL	HAND SOAP, LYSOL TOILET BOWL	\$ 83.41	10521210-54100	SUPPLIES	\$ 83.41	\$ 29,671.13
AMAZON CAPITAL	LYSOL DISINFECTANT SPRAY,	\$ 98.68	10521210-54100	SUPPLIES	\$ 98.68	\$ 29,671.13
AMAZON CAPITAL	FABULOSO CLEANER	\$ 177.14	10521210-54100	SUPPLIES	\$ 177.14	\$ 29,671.13
HOME DEPOT	CONTRACTOR BAGS. COTTON MOP REFILL	\$ 196.84	10521210-54100	SUPPLIES	\$ 196.84	\$ 3,687.45
MENDO MILL	GORILLA WOOD GLUE	\$ 9.91	10521210-54100	SUPPLIES	\$ 9.91	\$ 2,214.55
MENDO MILL	GROUT SPONGE, JNT CMPND ALL PURP	\$ 20.92	10521210-54100	SUPPLIES	\$ 20.92	\$ 2,214.55
MENDO MILL	PELLETS	\$ 36.66	10521210-54100	SUPPLIES	\$ 36.66	\$ 2,214.55
SOLID WASTES	MISC. DUMP FEES	\$ 384.30	10521210-54100	SUPPLIES	\$ 83.56	\$ 66,097.79
STAPLES	CUSTOM PRINT FLYER	\$ 36.68	10521210-54100	SUPPLIES	\$ 36.68	\$ 1,151.15
FEDERAL EXPRESS	SHIPPING SERVICES	\$ 73.52	10521210-54101	POSTAGE	\$ 31.99	\$ 352.92
HOME DEPOT	ECHO GAS 21 IN SELF PROPELLED MOWER	\$ 630.39	10521210-54102	SMALL TOOLS	\$ 630.39	\$ 3,687.45
MENDO MILL	LOCKING HITCH PIN	\$ 25.61	10521210-54102	SMALL TOOLS	\$ 25.61	\$ 2,214.55
GALLS	FIRE PPE	\$ 227.46	10521210-54106	SPECIALTY SUPPLIES	\$ 227.46	\$ 2,628.98
GALLS	FIRE PPE	\$ 420.06	10521210-54106	SPECIALTY SUPPLIES	\$ 420.06	\$ 2,628.98
GALLS	FIRE PPE	\$ 1,981.46	10521210-54106	SPECIALTY SUPPLIES	\$ 1,981.46	\$ 2,628.98
S.R. UNIFORM	FIRE ACADEMY PATCHES	\$ 25.30	10521210-54106	SPECIALTY SUPPLIES	\$ 25.30	\$ 25.30
SCOTT'S PPE	CLEAN PANT LINER, INSPECT HYLAND,	\$ 125.50	10521210-54106	SPECIALTY SUPPLIES	\$ 125.50	\$ 125.50
UKIAH TROPHIES	EMBROIDERY SERVICES	\$ 82.16	10521210-54106	SPECIALTY SUPPLIES	\$ 82.16	\$ 8,143.27
UKIAH TROPHIES	EMBROIDERY SERVICES	\$ 2,872.12	10521210-54106	SPECIALTY SUPPLIES	\$ 2,872.12	\$ 8,143.27
XEROX CORP	COPIER LEASE - SEE ADD'L DESCR	\$ 168.90	10521210-54500	EQUIP RENTS AND LEASES	\$ 168.90	\$ 3,029.01
AT&T	TELEPHONE	\$ 19.68	10521210-55100	TELEPHONE	\$ 6.30	\$ 16,732.79
AT&T	TELEPHONE	\$ 19.68	10521210-55100	TELEPHONE	\$ 6.30	\$ 16,732.79
AT&T	TELEPHONE	\$ 31.82	10521210-55100	TELEPHONE	\$ 10.18	\$ 16,732.79
AT&T	TELEPHONE	\$ 31.97	10521210-55100	TELEPHONE	\$ 10.23	\$ 16,732.79
COMCAST	INTERNET SERVICES: 141 LOVERS LN	\$ 141.00	10521210-55100	TELEPHONE	\$ 45.12	\$ 4,810.64
COMCAST	INTERNET SERVICES: 1500 S STATE ST	\$ 400.35	10521210-55100	TELEPHONE	\$ 126.71	\$ 4,810.64
RESPECTECH	PHONE SYSTEM SERVICES	\$ 112.50	10521210-55100	TELEPHONE	\$ 35.61	\$ 112.50
CITY OF UKIAH	WATER SERVICES: 1500 S STATE ST	\$ 47.58	10521210-55210	UTILITIES	\$ 14.28	\$ 365,417.97
CITY OF UKIAH	WATER SERVICES: 141 LOVERS LN	\$ 150.97	10521210-55210	UTILITIES	\$ 45.30	\$ 365,417.97
PG&E CO	PACIFIC GAS & ELECTRIC	\$ 307.75	10521210-55210	UTILITIES	\$ 92.33	\$ 87,474.09
PG&E CO	PACIFIC GAS & ELECTRIC	\$ 432.77	10521210-55210	UTILITIES	\$ 129.35	\$ 87,474.09
PG&E CO	PACIFIC GAS & ELECTRIC	\$ 666.51	10521210-55210	UTILITIES	\$ 199.22	\$ 87,474.09
PG&E CO	PACIFIC GAS & ELECTRIC	\$ 1,875.23	10521210-55210	UTILITIES	\$ 562.57	\$ 87,474.09
PG&E CO	PACIFIC GAS & ELECTRIC	\$ 2,394.11	10521210-55210	UTILITIES	\$ 715.60	\$ 87,474.09
REDWOOD WASTE	GARBAGE SERVICES: 141 LOVERS LANE	\$ 87.39	10521210-55210	UTILITIES	\$ 26.22	\$ 536.72

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REDWOOD WASTE	GARBAGE SERVICES: 141 LOVERS LN	\$	87.39	10521210-55210	UTILITIES	\$	26.22	\$	536.72
REDWOOD WASTE	GARBAGE SERVICES: 1500 S STATE ST	\$	87.39	10521210-55210	UTILITIES	\$	26.22	\$	536.72
REDWOOD WASTE	GARBAGE SERVICES: 1500 S STATE ST	\$	87.39	10521210-55210	UTILITIES	\$	26.22	\$	536.72
ROGINA WATER	WATER SERVICES: 1301 TALMAGE RD	\$	43.57	10521210-55210	UTILITIES	\$	13.07	\$	131.62
ROGINA WATER	WATER SERVICES: 1301 TALMAGE RD	\$	88.05	10521210-55210	UTILITIES	\$	29.82	\$	131.62
AMAZON CAPITAL	PHONE CAR MOUNT CHARGER, ARM REST	\$	190.32	10521210-56120	EQUIPMENT MAINT & REPAIR	\$	190.32	\$	29,671.13
EUREKA OXYGEN CO	EQUIPMENT MAINTANENCE	\$	113.10	10521210-56120	EQUIPMENT MAINT & REPAIR	\$	113.10	\$	9,086.83
EUREKA OXYGEN CO	LATE FEES	\$	210.37	10521210-56120	EQUIPMENT MAINT & REPAIR	\$	210.37	\$	9,086.83
EUREKA OXYGEN CO	EQUIPMENT MAINTENANCE	\$	278.40	10521210-56120	EQUIPMENT MAINT & REPAIR	\$	278.40	\$	9,086.83
EUREKA OXYGEN CO	EQUIPMENT MAINTENANCE	\$	342.28	10521210-56120	EQUIPMENT MAINT & REPAIR	\$	342.28	\$	9,086.83
EUREKA OXYGEN CO	EQUIPMENT MAINTANENCE	\$	386.02	10521210-56120	EQUIPMENT MAINT & REPAIR	\$	386.02	\$	9,086.83
EUREKA OXYGEN CO	EQUIPMENT MAINTANENCE	\$	493.64	10521210-56120	EQUIPMENT MAINT & REPAIR	\$	493.64	\$	9,086.83
EUREKA OXYGEN CO	EQUIPMENT MAINTANENCE	\$	1,609.80	10521210-56120	EQUIPMENT MAINT & REPAIR	\$	1,609.80	\$	9,086.83
ADAMSON POLICE	12V WHT/RED 6" COMPARTMENT LT	\$	614.89	10521210-56130	EXTERNAL SERVICES	\$	614.89	\$	1,149.91
AMAZON CAPITAL	ACCESSPOINT KEYSAFE	\$	59.76	10521210-56130	EXTERNAL SERVICES	\$	59.76	\$	29,671.13
AMAZON CAPITAL	PROPANE HOSE LOW PRESURE, PROPANE	\$	66.39	10521210-56130	EXTERNAL SERVICES	\$	66.39	\$	29,671.13
AMAZON CAPITAL	TRAILER HITCH LOCKS, TRAILER HITCH	\$	349.86	10521210-56130	EXTERNAL SERVICES	\$	349.86	\$	29,671.13
AMAZON CAPITAL	2-PIN FLANGE PIGTAIL KIT, 4-PIN KIT, 8-PIN	\$	481.92	10521210-56130	EXTERNAL SERVICES	\$	481.92	\$	29,671.13
B & B INDUSTRIAL	C LOCK NF 5/8-18 (50-BOX)	\$	12.96	10521210-56130	EXTERNAL SERVICES	\$	12.96	\$	3,246.35
FLEETPRIDE	SILICOME HEATER SOLD/FOOT	\$	118.39	10521210-56130	EXTERNAL SERVICES	\$	118.39	\$	2,552.09
FLEETPRIDE	GOVERNOR-1200	\$	144.54	10521210-56130	EXTERNAL SERVICES	\$	144.54	\$	2,552.09
FLEETPRIDE	MISC. PARTS & MATERIALS AS NEED	\$	144.54	10521210-56130	EXTERNAL SERVICES	\$	144.54	\$	2,552.09
FLEETPRIDE	AIR BRAKE HOSE	\$	610.66	10521210-56130	EXTERNAL SERVICES	\$	610.66	\$	2,552.09
FRIEDMANS	HOSE COUPLER FEMALE	\$	13.04	10521210-56130	EXTERNAL SERVICES	\$	13.04	\$	15,775.09
FRIEDMANS	AA BATTERIES, DRANO, OUTDOOR CORD,	\$	68.23	10521210-56130	EXTERNAL SERVICES	\$	68.23	\$	15,775.09
GOLDEN STATE	CP BAR PSV FRLH, SEAT SENSOR	\$	441.06	10521210-56130	EXTERNAL SERVICES	\$	441.06	\$	3,396.20
GOLDEN STATE	SHOCK ABSORBER, FRONT, LINK, TOE	\$	747.50	10521210-56130	EXTERNAL SERVICES	\$	747.50	\$	3,396.20
GOLDEN STATE	SHOCK ABSORBER FRONT, REAR	\$	2,207.64	10521210-56130	EXTERNAL SERVICES	\$	2,207.64	\$	3,396.20
HANSEL FORD INC	WIRING ASY	\$	59.55	10521210-56130	EXTERNAL SERVICES	\$	59.55	\$	4,006.97
HANSEL FORD INC	SEAT BELT, SLEEVES	\$	91.56	10521210-56130	EXTERNAL SERVICES	\$	91.56	\$	4,006.97
OPPERMAN & SON	RETURN: AIR HOSE ASSEMBLY		(\$36.67)	10521210-56130	EXTERNAL SERVICES		(\$36.67)	\$	3,321.51
OPPERMAN & SON	STEMCO HUB SEAL KIT, TEMCO HUB KIT	\$	48.10	10521210-56130	EXTERNAL SERVICES	\$	48.10	\$	3,321.51
OPPERMAN & SON	AIR HOSE ASSEMBLY	\$	55.57	10521210-56130	EXTERNAL SERVICES	\$	55.57	\$	3,321.51
OPPERMAN & SON	OIL SEAL, SMALL HUB PLUG, GASKET, DISC	\$	447.28	10521210-56130	EXTERNAL SERVICES	\$	447.28	\$	3,321.51
OPPERMAN & SON	BRAEK SHOE, BRAKE SHOE CORE,	\$	591.21	10521210-56130	EXTERNAL SERVICES	\$	591.21	\$	3,321.51
OPPERMAN & SON	FREIGHT FOR SIREN/SIREN SWITCH	\$	847.28	10521210-56130	EXTERNAL SERVICES	\$	847.28	\$	3,321.51
OPPERMAN & SON	DISC ROTOR	\$	888.97	10521210-56130	EXTERNAL SERVICES	\$	888.97	\$	3,321.51
OREILLY AUTO	CORE RETURN		(\$653.25)	10521210-56130	EXTERNAL SERVICES		(\$653.25)	\$	25,003.75
OREILLY AUTO	RETURN: FUEL FILTER		(\$412.22)	10521210-56130	EXTERNAL SERVICES		(\$412.22)	\$	25,003.75
OREILLY AUTO	THERMOSTAT	\$	16.74	10521210-56130	EXTERNAL SERVICES	\$	16.74	\$	25,003.75
OREILLY AUTO	5-PIN RELAY	\$	17.51	10521210-56130	EXTERNAL SERVICES	\$	17.51	\$	25,003.75
OREILLY AUTO	RELAY'S	\$	41.15	10521210-56130	EXTERNAL SERVICES	\$	41.15	\$	25,003.75
OREILLY AUTO	SEALED BEAM	\$	46.25	10521210-56130	EXTERNAL SERVICES	\$	46.25	\$	25,003.75

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OREILLY AUTO	BOSCH PURE VISION	\$	47.01	10521210-56130	EXTERNAL SERVICES	\$	47.01	\$	25,003.75
OREILLY AUTO	WIPER BLADES	\$	47.01	10521210-56130	EXTERNAL SERVICES	\$	47.01	\$	25,003.75
OREILLY AUTO	SEALED BEAMS	\$	69.38	10521210-56130	EXTERNAL SERVICES	\$	69.38	\$	25,003.75
OREILLY AUTO	WATER PUMP	\$	127.65	10521210-56130	EXTERNAL SERVICES	\$	127.65	\$	25,003.75
OREILLY AUTO	AIR FILTER, FUEL FILTER, OIL FILTER	\$	186.73	10521210-56130	EXTERNAL SERVICES	\$	186.73	\$	25,003.75
OREILLY AUTO	FUEL FILTER	\$	189.94	10521210-56130	EXTERNAL SERVICES	\$	189.94	\$	25,003.75
OREILLY AUTO	THROTTLE BODY, OIL FILTER, AIR FILTER,	\$	232.12	10521210-56130	EXTERNAL SERVICES	\$	232.12	\$	25,003.75
OREILLY AUTO	BATTERY, CORE CHARGE	\$	253.49	10521210-56130	EXTERNAL SERVICES	\$	253.49	\$	25,003.75
OREILLY AUTO	BATTERY, CORE CHARGE	\$	506.98	10521210-56130	EXTERNAL SERVICES	\$	506.98	\$	25,003.75
OREILLY AUTO	OIL FILTER, OIL, FUEL FILTER	\$	594.80	10521210-56130	EXTERNAL SERVICES	\$	594.80	\$	25,003.75
OREILLY AUTO	TURBO REMAN, CORE DEPOSIT	\$	3,138.08	10521210-56130	EXTERNAL SERVICES	\$	3,138.08	\$	25,003.75
PETERSON POWER	RING	\$	7.48	10521210-56130	EXTERNAL SERVICES	\$	7.48	\$	1,317.68
PETERSON POWER	FITTINGS	\$	13.87	10521210-56130	EXTERNAL SERVICES	\$	13.87	\$	1,317.68
PETERSON POWER	CONNECTOR	\$	16.47	10521210-56130	EXTERNAL SERVICES	\$	16.47	\$	1,317.68
PETERSON POWER	CONNECTOR	\$	18.86	10521210-56130	EXTERNAL SERVICES	\$	18.86	\$	1,317.68
PETERSON POWER	HOSE BK	\$	50.15	10521210-56130	EXTERNAL SERVICES	\$	50.15	\$	1,317.68
PETERSON POWER	COUPLINGS	\$	86.88	10521210-56130	EXTERNAL SERVICES	\$	86.88	\$	1,317.68
PETERSON POWER	ELEMENT AS	\$	93.65	10521210-56130	EXTERNAL SERVICES	\$	93.65	\$	1,317.68
PETERSON POWER	HOSES, FAB HOSE ASSEMBLY	\$	120.60	10521210-56130	EXTERNAL SERVICES	\$	120.60	\$	1,317.68
PETERSON POWER	SEALANT, LT 592 50ML	\$	125.10	10521210-56130	EXTERNAL SERVICES	\$	125.10	\$	1,317.68
PETERSON TRUCKS	O-RING SEALS	\$	5.04	10521210-56130	EXTERNAL SERVICES	\$	5.04	\$	12,630.21
PETERSON TRUCKS	WINDOW KIT, HUB CAP, WHEEL	\$	36.11	10521210-56130	EXTERNAL SERVICES	\$	36.11	\$	12,630.21
PETERSON TRUCKS	GASKET	\$	36.67	10521210-56130	EXTERNAL SERVICES	\$	36.67	\$	12,630.21
PETERSON TRUCKS	SEAL, WASHERS, STUDS	\$	41.00	10521210-56130	EXTERNAL SERVICES	\$	41.00	\$	12,630.21
PETERSON TRUCKS	AIR FILTER	\$	49.78	10521210-56130	EXTERNAL SERVICES	\$	49.78	\$	12,630.21
PETERSON TRUCKS	GASKET, FREIGHT	\$	53.60	10521210-56130	EXTERNAL SERVICES	\$	53.60	\$	12,630.21
PETERSON TRUCKS	HOSE, HOSE CLAMP	\$	66.10	10521210-56130	EXTERNAL SERVICES	\$	66.10	\$	12,630.21
PETERSON TRUCKS	FILTER	\$	177.06	10521210-56130	EXTERNAL SERVICES	\$	177.06	\$	12,630.21
PETERSON TRUCKS	GASKETS	\$	258.07	10521210-56130	EXTERNAL SERVICES	\$	258.07	\$	12,630.21
PETERSON TRUCKS	INSPECTION AND PNEUMATIC CLEANING	\$	271.80	10521210-56130	EXTERNAL SERVICES	\$	271.80	\$	12,630.21
PETERSON TRUCKS	SEAL, GASKET, SPEED KIT, OIL GASKET	\$	416.42	10521210-56130	EXTERNAL SERVICES	\$	416.42	\$	12,630.21
PETERSON TRUCKS	GASKETS, O-RING SEALS, WASHERS,	\$	523.64	10521210-56130	EXTERNAL SERVICES	\$	523.64	\$	12,630.21
PETERSON TRUCKS	GASKETS, TUBE INJECTORS	\$	950.94	10521210-56130	EXTERNAL SERVICES	\$	950.94	\$	12,630.21
PETERSON TRUCKS	GASKETS, SEAL KITS, CLAMPS,	\$	1,147.48	10521210-56130	EXTERNAL SERVICES	\$	1,147.48	\$	12,630.21
PETERSON TRUCKS	ROTOR, SCOTSEAL, WINDOW KIT, GASKET	\$	1,156.31	10521210-56130	EXTERNAL SERVICES	\$	1,156.31	\$	12,630.21
PETERSON TRUCKS	DOOR SEAL, DOOR ACTUATOR	\$	1,323.75	10521210-56130	EXTERNAL SERVICES	\$	1,323.75	\$	12,630.21
RINEHART OIL INC	FUEL CARD SERVICES AS PER ATTACHED	\$	6,121.98	10521210-56210	FUEL & FLUIDS	\$	5,464.12	\$	70,517.12
RINEHART OIL INC	FUEL CARD CHARGES AS NEEDED	\$	6,834.92	10521210-56210	FUEL & FLUIDS	\$	2,771.59	\$	70,517.12
RINEHART OIL INC	FUEL CARD CHARGES AS NEEDED	\$	7,142.44	10521210-56210	FUEL & FLUIDS	\$	2,753.67	\$	70,517.12
HOME DEPOT	CU MODULR AL MC UIK WHIP	\$	26.13	10521210-56300	BUILDING MAINT. & REPAIR	\$	26.13	\$	3,687.45
HOME DEPOT	CELL SHADE BLACK OUT	\$	217.66	10521210-56300	BUILDING MAINT. & REPAIR	\$	217.66	\$	3,687.45
MENDO MILL	DW WRIE CUP COARSE, CRIMPED	\$	33.35	10521210-56300	BUILDING MAINT. & REPAIR	\$	33.35	\$	2,214.55
MENDO MILL	PADLOCK COMB, COIL CHAIN STL	\$	59.49	10521210-56300	BUILDING MAINT. & REPAIR	\$	59.49	\$	2,214.55

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MENDO MILL	ANIMAL TRAP RODENT CO2	\$	184.46	10521210-56300	BUILDING MAINT. & REPAIR	\$	184.46	\$	2,214.55
MENDO MILL	OUTLET COVERS, ELEC TAPE, DUAL NM,	\$	807.75	10521210-56300	BUILDING MAINT. & REPAIR	\$	807.75	\$	2,214.55
AMAZON CAPITAL	FIRE INVESTIGATOR	\$	223.20	10521210-57100	LEARNING AND DEVELOPMENT	\$	223.20	\$	29,671.13
ROBERT RAMSEIER	TRAVEL RIEMBURSEMENT	\$	233.00	10521210-57100	LEARNING AND DEVELOPMENT	\$	233.00	\$	233.00
RYAN NELSON	TRAVEL REIMBURSEMENT	\$	137.00	10521210-57100	LEARNING AND DEVELOPMENT	\$	137.00	\$	137.00
SRJC	REGISTRATION: K QUIGLEY	\$	40.75	10521210-57100	LEARNING AND DEVELOPMENT	\$	40.75	\$	534.50
INTERWEST CONS.	FIRE PLANS EXAMINER	\$	662.50	10523600-52100	CONTRACTUAL SERVICES	\$	662.50	\$	33,191.57
AT&T	TELEPHONE	\$	19.68	10523600-55100	TELEPHONE	\$	1.38	\$	16,732.79
AT&T	TELEPHONE	\$	19.68	10523600-55100	TELEPHONE	\$	1.38	\$	16,732.79
AT&T	TELEPHONE	\$	31.82	10523600-55100	TELEPHONE	\$	1.59	\$	16,732.79
AT&T	TELEPHONE	\$	31.97	10523600-55100	TELEPHONE	\$	2.24	\$	16,732.79
COMCAST	INTERNET SERVICES: 141 LOVERS LN	\$	141.00	10523600-55100	TELEPHONE	\$	7.05	\$	4,810.64
COMCAST	INTERNET SERVICES: 1500 S STATE ST	\$	400.35	10523600-55100	TELEPHONE	\$	18.22	\$	4,810.64
RESPECTECH	PHONE SYSTEM SERVICES	\$	112.50	10523600-55100	TELEPHONE	\$	5.12	\$	112.50
RINEHART OIL INC	FUEL CARD CHARGES AS NEEDED	\$	6,834.92	10523600-56210	FUEL & FLUIDS	\$	71.50	\$	70,517.12
RINEHART OIL INC	FUEL CARD CHARGES AS NEEDED	\$	7,142.44	10523600-56210	FUEL & FLUIDS	\$	108.68	\$	70,517.12
MATT KEIZER	COURSE REIMBURSEMENT	\$	288.00	10523600-57100	LEARNING AND DEVELOPMENT	\$	288.00	\$	719.00
MATT KEIZER	COURSE REIMBURSEMENT	\$	431.00	10523600-57100	LEARNING AND DEVELOPMENT	\$	431.00	\$	719.00