

TOWN OF EAST HADDAM

Selectman's Office
P. O. Box 385
Moodus, CT 06469

Documents for Proposal to supply

Two (2) Identical Emergency Vehicle Apparatus – Squads

Prepared By:

Town of East Haddam

Board of Selectmen

Todd H. Gelston – First Selectman

Eric W. Dill– Selectman

Thomas J. Sevigny - Selectman



May 2026

**LEGAL NOTICE
INVITATION TO BID
TOWN OF EAST HADDAM**

The Town of East Haddam requests that sealed bids be submitted for the following: Emergency Vehicle Apparatus – SQUAD

Said bids must be in a sealed envelope clearly marked: **EHFD SQUADS**. An original and two (2) additional hard copies, as well as an electronic copy on a flash drive of said bids are to be provided. Sealed bids for the Emergency Vehicle Apparatus – SQUAD will be received at the Office of the First Selectman at the Municipal Office Complex, 1 Plains Road, P.O. Box 385, Moodus, CT 06469, **until 11:00 A.M. local time, on Tuesday, June 16, 2026**. Bids will be opened at that time and date.

All inquiries should be directed to the Office of the First Selectman at admin@easthaddam.org. No telephone calls will be accepted. Responses to questions submitted shall be provided to all known respondents to this bid. No questions will be accepted or answered after Thursday, June 4, 2026. Addendums will be prepared as necessary and distributed to all interested requestors.

Specifications and bid documents may be obtained from the office of the **First Selectman, Town of East Haddam, Municipal Office Complex, 1 Plains Road, P.O. Box 385, Moodus, CT 06469** or by calling **(860) 873-5021**.

The Town of East Haddam reserves the right to waive any informalities or defects in any bid. The Town reserves the right to accept other than the lowest bid if the Board of Selectmen, in its sole discretion, deems it to be in the best interest of the Town to do so. Bids, amendments to bids or withdrawal of bids after the time set for bid acceptance will not be considered.

Dated at East Haddam, Connecticut
This 15th day of May 2026

Todd H. Gelston
First Selectman

INFORMATION FOR BIDDERS

1. PROPOSALS RECEIVED

Sealed proposals for two (2) identical Fire Department Squads will be received at the Office of the First Selectman at the Municipal Office Complex, 1 Plains Road, P.O. Box 385, Moodus, CT 06469, **until 11:00 A.M. local time, on Tuesday, June 16, 2026.** Proposals will be opened at that time and date. An original and two (2) additional hard copies, as well as an electronic copy of said bids are to be provided.

Bidder hereby agrees to commence work under this Contract within ninety (90) consecutive calendar days of receiving notification to proceed. Additionally, the bidder agrees to fully complete the project and deliver one vehicle within (24) twenty-four months and the second vehicle within (36) thirty-six months from notification. If these timelines cannot be met, Bidder will note timeline within their proposal.

2. ADDENDA AND INTERPRETATIONS

No interpretations of the meaning of the vehicle specifications or other pre-bid documents will be made to any Bidder orally.

All inquiries should be directed to the Office of the First Selectman at admin@easthaddam.org. No telephone calls will be accepted. Responses to questions submitted shall be provided to all known respondents to this bid. No questions will be accepted or answered after Thursday, June 4, 2026. Addendums will be prepared as necessary and distributed to all interested requestors.

3. FAMILIARITY OF THE WORK

Each Bidder shall fully inform themselves prior to bidding as to existing conditions and limitations under which the work is to be performed and shall include in the bid a sum to cover the cost of items necessary to perform the work as set forth on the Bid Form. No allowance will be made to a Bidder because of lack of such examination or knowledge. The submission of a bid will be considered as conclusive evidence that the Bidder has made such examination.

The Contractor agrees that he shall make no claim for and has no right to additional payment or extension of time for completion of the work, or any other concessions, because of any interpretations or misunderstanding on his part of this Contract, or because of any failure on his part to fully acquaint himself with all requirements/conditions relating to the work.

4. ESTIMATE OF WORK

The work has not been subdivided into unit price items for bidding purposes. Each bid is to be made on a lump-sum basis.

5. DISQUALIFICATION OF BIDDERS

More than one proposal from an individual, firm, partnership, corporation, or an association under the same or different names will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one proposal for the work contemplated will cause the rejection of all proposals in which such Bidder is interested. Any or all proposals in which such Bidder is interested will be rejected if there is reason for believing that collusion exists among the Bidders; and all participants in such collusion will not be considered in future proposals for the same work. Proposals in which the prices are obviously unbalanced may be rejected. No Contract will be awarded except to competent Bidders capable of performing the class of work contemplated.

6. INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to provide to the Town of East Haddam (also referred to as "the Town"), a complete Public Safety Apparatus equipped as hereinafter specified. With a view to obtaining the best results and the most acceptable apparatus for service in the Town, these specifications detail the general requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful bidder must conform.

Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features.

7. PREPARATION OF PROPOSALS

The Proposal must be made upon the Bid Form contained herein. The blank spaces in the Proposals must be filled in correctly where indicated. The Bidder must state, both in words and in numerals, written or printed in ink, the price for which he proposes to do the work contemplated. In case of discrepancy between the words and the numerals, the words shall govern. Ditto marks are not considered writing or printing and shall not be used. The Bidder shall sign his Proposal correctly. If an individual makes the Proposal, his name and post office address must be shown. If made by a firm, partnership, or corporation, the Proposal must be signed by an official of the firm, partnership, or corporation authorized to sign contracts, and must show the post office address of the firm, partnership, or corporation.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the Bidder, the Bidder's address, and name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to: Town of East Haddam, First Selectman, Municipal Office Complex, P.O. Box 385, Moodus, CT 06469.

8. IRREGULAR PROPOSALS

The Town of East Haddam reserves the right to reject any proposals if they show any omission, alteration of form, additions not called for, conditional bids, or irregularities of any kind.

9. WITHDRAWAL OF PROPOSALS

If a Bidder wishes to withdraw his Proposal, he may do so before the time fixed for the opening of bids by communicating his purpose to the East Haddam First Selectman. Upon

such notice, the Proposal will be made available unopened to the Bidder at the East Haddam First Selectman's Office.

10. CUSTOMER BID REVIEW PROCESS

The Town will review all bids and make an award based on the accuracy of each bid submitted with consideration given as follows:

- Bid submittal includes all required documents
- Apparatus Proposed Meets Spec
- Delivery timeline after contract Award
- Proposal Price

The Town reserves the right to purchase apparatus that is compliant with these specifications and best suited for the needs of the Town and not necessarily the lowest submitted bid.

11. BID PRICE AND DELIVERY

Each bidder shall state the total proposed purchase price and delivery time to complete the apparatus in calendar days.

12. DUNN & BRADSTREET FINANCIAL STATEMENT

A current D&B Report must be submitted with the bid proposal.

13. BID BOND

A 10% Bid Bond shall be supplied from the manufacturer with the bid. Bonds by dealers or sales representative are not acceptable. Bid Bond must be written by an Insurance Company that is licensed to do business within the State of Connecticut.

This bid bond shall be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond shall be issued by an authorized representative of the Surety Company and shall be accompanied by a certified power of attorney dated on or before the date of bid. The bid bond shall include language, which assures that the bidder/principal shall give a bond or bonds as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic Two (2) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract. Bid Bond must be an original; no photocopies will be accepted.

14. PERFORMANCE BOND

A 100% Performance Bond shall be supplied at time of contract signing. Bonds by dealers or sales representative are not acceptable. Performance Bond shall be supplied by an insurance company that is licensed to do business within the State of Connecticut. With respect to the qualifications of proposed bond or sureties, the bidder's bonding company must meet the following requirements:

1. An acceptable surety as outlined by the Department of Treasury on their most recent register at a limit of at least \$10,000,000;

2. AM Best rating of "A" or better with a financial rating of at least "VIII"; and
3. Licensed as a surety in the state where the sale is to be made.

15. PAYMENT

Full payment will be made on delivery. The vehicle will be delivered to the purchasing authority and full payment for the apparatus shall be made, unless prior payment terms and conditions have been agreed to by the purchasing authority and the manufacturer at the time of contract signing.

16. PURCHASER'S RIGHTS

The Town has carefully researched and prepared these specifications based upon the particular service needs of the East Haddam Fire Department (EHFD). In order to ensure a thorough assessment, a review of features, equipment and options offered by a number of manufacturers was also conducted. Therefore, the Purchaser reserves the right to accept or reject any or all bids as it deems to be in its best interest to do so.

17. TITLE TRANSFER

Transfer of MSO (Manufacturer Statement of Origin) will be made after all invoices relating to the apparatus are paid in full. This is to include vehicle payment, and payment for any change orders and additions of equipment agreed to by the purchaser.

18. LIABILITY

The bidder, if their bid is accepted, shall defend any and all suits and assume all liability for the failure of any device or article forming part of the apparatus or any appliance furnished under the contract when used and maintained in accordance with the manufacturer's recommendations.

19. LIABILITY INSURANCE COVERAGE

The Builder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

General Liability:	\$ 1,000,000
Auto Liability:	\$ 1,000,000
Workers' Compensation with Employer's Liability	\$ 1,000,000
Pollution Liability	\$ 1,000,000

In order to protect the department and its personnel, the bidder shall show proof in force of product liability and facility insurance equal to or exceeding five-million dollars (\$5M). Failure to carry insurance of at least this amount or failure to include proof of coverage shall be cause to reject the bidder's proposal.

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage. The policy shall include the Town of East Haddam as an additional insured.

Coverage shall be provided by a carrier rated "Excellent" by A.M. Bests.

20. EXCESS LIABILITY INSURANCE

The Builder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of excess liability insurance:

Aggregate: \$10,000,000 / Each Occurrence: \$10,000,000

Excess liability shall sit above all underlying liability coverages

The policy shall be written on an occurrence basis and at a minimum provide the same coverage as Bidder's General Liability, Automobile Liability and Employer's Liability policies.

The Town of East Haddam shall be included as an additional insured on the General Liability, Automobile Liability, Excess Liability, Employer's Liability and Pollution Liability policies. Vendors must provide a copy of the additional insured endorsement on their policies which include the Town as an additional insured.

The Bidder agrees to furnish the Town with a current Certificate of Insurance with the coverage listed above. The certificate shall be made out to the purchaser and be an original, no photocopies shall be accepted. The Certificate of Insurance shall provide that the Town be given 30 days' advance notice of cancellation, nonrenewable or material change in coverage.

Failure to carry insurance of at least this amount or failure to include proof of coverage shall be cause to reject the bidder's proposal.

While the apparatus is in the builder's care, custody and control, builder is responsible for insuring said apparatus.

21. MANUFACTURER'S HISTORY

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in continuous operation of building emergency vehicle apparatus for a minimum of twenty-five years. Bidders shall also include a complete history timeline of the company.

22. USA MANUFACTURER

Only those manufacturers who are owned by United States corporations, and who operate in the continental United States will be acceptable. Statement of factory location shall be supplied.

23. USER LIST

Each bidder shall include a user list of New England Fire Departments who have a similar vehicle from the manufacturer and supplying dealer in service. The list will include contact names and phone numbers.

24. MANUFACTURER’S REPRESENTATIVE – SALES AND SERVICE

Bids shall only be considered from manufacturers that offer local dealer representation and that have an established reputation in the field of emergency vehicle equipment apparatus sales and service and have been in continuous business for a minimum of (10) ten years.

Local dealer representation shall mean that the supplying apparatus manufacturer must show proof in the bid proposal that they own and operate or have service agreements with a fully staffed emergency vehicle service and repair facility that can provide prompt warranty and repair service that is located within 75 miles of the Town of East Haddam.

Fully staffed, for the purposes of this procurement, shall mean staffed with a minimum of 3 full-time certified ASE and/or EVT technicians. It shall also include “full-time” office staff during normal office hours.

25. APPARATUS DEALER’S HISTORY

Supplying apparatus dealer shall also include a complete history timeline of the company, location of the service center, as well as a complete list of the dealer’s apparatus service capabilities.

26. PROPOSAL SPECIFICATIONS

Each bid shall be accompanied by a set of "Contractor's Specifications" consisting of a detailed description of the apparatus being furnished under this contract. Computer runoff sheets are not acceptable as "Contractor's Specifications".

27. APPARATUS DELIVERY INSPECTION

Apparatus shall be inspected upon apparatus completion for compliance with specifications. Deviations will not be tolerated and will be cause for rejection of Apparatus unless they were originally listed in bidder's proposal and accepted in writing by the department.

28. BIDDING OR PROPOSING “EQUAL TO” ITEMS IN PROPOSER SPECIFICATIONS

The Town has carefully developed this specification based on specific service duty and performance requirements deemed necessary. Therefore, when the bidder proposes any item that they consider “equal to” those contained in these specifications, the bidder shall list the “equal to” item as an exception in the compliance matrix.

Further, the bidder shall provide, in detail, all information that will be necessary for the Town to determine acceptability of the “equal to” item(s).

Equal to items shall not be acceptable where this specification states “no exception”. The final determination of an acceptable “equal to” item shall be with, and in the opinion of the purchaser.

29. SALES TAX

Certain materials and supplies incorporated in the work of this project are exempt from Connecticut Sales Tax. The Bidder shall familiarize himself with current regulations of the State Tax Department. The tax on materials or supplies exempted by such regulations shall not be included as part of the bid. Upon request, the Owner will furnish the successful Bidder a sales tax exemption letter.

30. COMPLIANCE WITH FEDERAL AND STATE REGULATIONS

The Contractor shall be responsible for full compliance with any Federal and/or State laws, regulations and standards, as applicable to any project fully or partially funded by State and/or Federal funding agency.

31. PERMITS

N/A

32. RIGHT TO REJECT

The Town of East Haddam reserves the right to reject any or all proposals or to accept any bid, should it deem it to be in the best interest of the Town of East Haddam.

33. LOCAL ORDINANCE

If the low bidder is not a local business (as defined hereinafter), then the next low bidder, provided it is within ten percent of the next low bidder, may at its option, if it is a local business, match the bid of the low bidder. The Board of Selectmen retains the sole judgment, within its discretion, to determine what constitutes low bidder and next low bidder, after due consideration to base bid, allowances and alternates to a bid, as they may apply. For the purpose of this provision only, “local business” is defined as a business or individual which is assessed real, personal, or motor vehicle taxes in East Haddam on the previous October 1 to the date of the bid opening.

INSTRUCTIONS TO BIDDERS

The purpose of these instructions and specifications is to describe the requirements, construction, and delivery of two (2) identical Emergency Vehicle Apparatus-SQUADS as outlined herein for the East Haddam Fire Department, here after referred to as the "Purchaser".

An original and two (2) additional hard copies, as well as an electronic copy on a flash drive of said bids are to be addressed to the Board of Selectmen, Municipal Office Complex, 1 Plains Road, P.O. Box 385, Moodus, CT 06469 and sealed in an envelope clearly marked **EHFD SQUAD**. All sealed bids will be accepted at the Selectman's Office until **11:00 AM, Tuesday, June 16, 2026**.

The Town of East Haddam reserves the right to waive any informalities or defects in any bid. The Town reserves the right to accept other than the lowest bid if the Board of Selectmen, in its sole discretion, deems it to be in the best interest of the Town to do so. Bids, amendments to bids, or withdrawal of bids after the time set for bid acceptance will not be considered.

A signed non-collusion statement (enclosed) must accompany all bids. No bid may be withdrawn for a period of forty-five (45) days.

I, the undersigned, have examined and carefully read the attached or referenced documents and hereby agree to furnish at the net price indicated all labor and equipment in accordance with the specification and conditions contained in these documents.

Item: Emergency Vehicle Apparatus – SQUAD with all required options per bid specification

Cost Per Truck \$ _____

Anticipated Delivery Date from signed contract Vehicle 1 (calendar days) _____

Anticipated Delivery Date from signed contract Vehicle 2 (calendar days) _____

Price in Words: _____

Signature:		Date:	
Print Name:		Title:	
Official Bidder Company Name:			
Official Company Address:			
Phone:	Fax:	Email:	

**TOWN OF EAST HADDAM, CONNECTICUT
NON-COLLUSIVE BID STATEMENT**

**East Haddam Fire Department
2027 or Newer Model Year Emergency Vehicle Apparatus-SQUAD
East Haddam, Connecticut**

All bidders are required to sign a Non-Collusive statement with all public bids as follows:

1. The bid has been arrived at by the bidder, independently and has been submitted without collusion with, and without any agreement, understanding, or planned common course of action with any other vendor of materials, supplies, equipment, or services described in the Invitation to Bid, designed to limit independent bidding or competition, and
2. The contents of the bid have not been communicated by the bidder or its employees or agents to any person not an employee or agent of the bidder or its surety on any bond furnished with the bid and will not be communicated to any person prior to the official opening of the bid.

Date: _____

Signed: _____

Company: _____

Address: _____

Address: _____

Phone: _____

Email: _____

GENERAL INSTRUCTIONS AND REQUIREMENTS:

It is the intent of these specifications to cover the furnishing and delivery of two complete and soundly engineered fire apparatus as hereinafter specified. These specifications cover the requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful bidder must conform.

Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all non-specified features.

Each bidder shall furnish satisfactory evidence of his ability to construct the apparatus as specified and shall state the location of the factory where the apparatus is to be built. The manufacturer shall also show that he is in a position to render prompt service and to furnish replacement parts for apparatus.

Each bid shall be accompanied by a set of "Contractor's Specifications", consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under contract must conform. Computer run-off sheets are not acceptable as descriptive literature.

To ensure the purchaser of a source for service and parts over the anticipated 20-year life of the apparatus, the manufacturer shall maintain a factory service, fabrication, painting, and testing facility within the New England area. The bidder shall indicate in his bid the name and location of factory service facility which complies with the above-mentioned requirements.

QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility of the various units, which require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and offroad requirements and speed conditions as set forth under "Performance Tests and Requirements". Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any component part for service or repair.

GENERAL CONSTRUCTION

The apparatus is designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association. Any deviation and/or change to this spec must be made in writing and agreed upon by both the purchaser and the Builder. Should a significant issue arise during the build of the apparatus, one that cannot be corrected via phone and/or email and which requires a visit to the Builder's facility, travel expenses shall be the responsibility of the Builder.

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be conducted with the apparatus fully loaded and a continuous run of twenty (20) miles or more shall be made under all driving conditions. During this time, the apparatus shall show no loss of power or overheating. The transmission, drive shafts and axles shall run quietly and be free from abnormal noise or vibration throughout the operating range of the apparatus. The truck must be fully compliant with all NFPA 1901 standards at the time of manufacture. This will be true for all specifications throughout the entire bid.

FAILURE TO MEET TESTS

In the event the apparatus fails to meet the test requirement of these specifications on the first trials, second trials may be made at the option of the bidder within thirty (30) days from the date of the first trials. Failure to comply with these requirements shall be cause for rejection.

Failure to comply with changes necessary to conform to any clause of the specifications within thirty (30) days shall also be cause for rejection of the apparatus. Permission to keep or store the unit in any building owned or occupied by the purchaser during the above specified time period with the permission of the builder shall not constitute acceptance.

PRE-CONSTRUCTION CONFERENCE

A pre-construction conference shall be conducted with the Truck Committee in person or via Zoom, at which time all final designs and equipment mounting locations shall be approved, prior to any sheet metal being cut. All expenses for travel, meals and lodging shall be the responsibility of the successful bidder. Bidder shall indicate the intention to provide the required pre-construction conference in the proposal packet.

GENERAL REQUIREMENTS

This specification package, along with any herein listed exceptions, shall be submitted as a part of the bidder's entire bid proposal. Do not detach or omit these sheets.

Proposal specifications must be on the manufacturer's own standard forms. In no case shall a bidder photocopy these specifications as his proposal specifications. **"NO EXCEPTIONS"**

Each bidder is required to provide in his bid to the purchaser a complete and accurate description of his own apparatus in the exact sequence of these specifications.

EXCEPTIONS, VARIATIONS, OR CLARIFICATIONS

These specifications are based upon performance criteria which have been developed by the purchaser as a result of extensive research and careful analysis of the data. Subsequently, these specifications reflect the only type of fire apparatus that is acceptable at this time. Therefore, major exceptions to the specifications will not be accepted.

All bidders shall place a "Y" for yes or a "N": for no next to each and every paragraph in on the right-hand edge of the paper, indicating compliance or noncompliance with that paragraph of the specifications.

A number shall be inserted next to the paragraph which relates to an explanation on page(s) entitled "Exceptions" that the bidder shall include with their proposal specifications.

Any exception shall be clearly defined with details as to the proposed alternative, referencing manufacturer and model where appropriate. Descriptive literature shall be provided to help evaluate the exception. A general exception cannot be taken for any paragraph. A full word for word Written Comparison shall be included within the bid for any exception listed. Each exception shall be considered by the degree of impact and total effect on the bid. Proposals taking total exception to the specifications shall not be considered by the purchaser. **"NO EXCEPTIONS"**

The purchaser shall determine which (if any) exceptions are acceptable and this determination shall be final.

The purchaser shall assume that failure to cite an exception indicates full compliance with the specifications. Should the equipment not comply with all requirements of this document, the equipment shall be rejected at the final inspection. All equipment shall be inspected for material, workmanship, and compliance with the specifications prior to acceptance. All equipment found to be in noncompliance shall be identified and the purchaser reserves the right to accept or reject the specific items. The noncompliant rejected equipment shall be replaced or reworked to meet the requirements of this document at no additional cost to the purchaser.

The bidder shall have thirty (30) days after delivery to fulfill that part(s) of the specifications which does not comply to the original outlined specifications. Bidder shall incur all expenses of pickup and redelivery of the apparatus.

VEHCILE SPECIFICATIONS

These specifications cover only the general requirements as to the type of construction and test to which the apparatus must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features.

All equipment and components shall comply with the National Fire Protection Association Pamphlet 1900 (2024 Edition), Standard for Automotive Fire Apparatus, for Pumper Fire Apparatus Equipped with a Fire Pump. In addition, the apparatus shall also comply with all federal, state, ICC, and DOT regulations, standards, and laws relating to commercial vehicles as well as to the fire apparatus.

Loose equipment shall be provided only as stated in the following pages.

CONSTRUCTION

The materials specified are considered absolute minimum. Exceptions will not be accepted or permitted since all raw materials of the specified type are available to all manufacturers. Since all manufacturers have the ability to shear, break, and weld as these specifications require, all basic design requirements shall be complied with.

The apparatus shall be constructed with due consideration to the nature and distribution of the load to be sustained and to the general character of service to which the apparatus is to be subjected when placed in service. All parts of the apparatus shall be of adequate strength to withstand the general service under full load. The apparatus shall be so designed that the various parts are readily accessible for lubrication, inspection, adjustment, and service.

DATA REQUIRED OF THE CONTRACTOR - NFPA 1900 - 2024 Edition

NFPA 7.21.1 Fire Apparatus Documentation. The contractor will supply, at the time of delivery, the following information:

- (1) The manufacturer's record of apparatus construction details, including the following information:
 - (a) Owner's name and address
 - (b) Apparatus manufacturer, model, and serial number
 - (c) Chassis make, model, and serial number
 - (d) GAWR of front and rear axles and GVWR
 - (e) Front tire size and total rated capacity in pounds (kilograms)
 - (f) Rear tire size and total rated capacity in pounds (kilograms)
 - (g) Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear)
 - (h) For each engine, make, model, serial number, rated horsepower and related speed, and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio
 - (i) Type of fuel and fuel tank capacity m Electrical system voltage and alternator output in amps
 - (k) Battery make, model, and capacity in cold cranking amps (CCA)
 - (l) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
 - (m) Ratios of all driving axles
 - (n) Maximum governed road speed
 - (o) For each pump, make, model, rated capacity in gallons per minute (liters per minute where applicable), maximum discharge pressure capability rating, and serial number
 - (p) For each pump, transmission make, model, serial number, and gear ratio
 - (q) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
 - (r) Water tank certified capacity in gallons or liters
 - (s) Foam tank (if provided) certified capacity in gallons (liters)
 - (t) Aerial device (if provided) type, rated vertical height in feet (meters), rated horizontal each in feet (meters), and rated capacity in pounds (kilograms)
 - (u) Paint manufacturer and paint number(s)
 - (v) Company name and signature of responsible company representative
 - (w) Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall fire apparatus (with the water tank full but without personnel, equipment, and hose)
- (2) Certification of compliance of the optical warning system (*see 10.7.17*)
- (3) Siren manufacturer's certification of the siren (*see 10.8.1.1*)
- (4) Written load analysis and results of the electrical system performance tests (*see 10.13.1 and Section 10.14*)
- (5) Certification of slip resistance of all stepping, standing, and walking surfaces (*see 12.6.4.5*)

- (6) If the apparatus has a fire pump or a wildland fire pump, the pump manufacturer's certification of suction capability (see 13.2.4.1 or 15.2.4.1)
- (7) If the apparatus is equipped with a fire pump or a wildland fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions (see 13.2.4.2 or 15.2.4.2)
- (8) If the apparatus has a fire pump, or a wildland fire pump copy of the apparatus manufacturer's approval for stationary pumping applications (see 13.3.1 or 15.3.1)
- (9) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed (see 13.3.2.2)
- (10) If the apparatus has a fire pump or a wildland fire pump, the pump manufacturer's certification of the hydrostatic test (see 13.5.2.2 or 15.5.2.2)
- (11) If the apparatus has a fire pump with a maximum discharge pressure capability rating that exceeds the hydrostatic test pressure of 13.5.2.1, the pump manufacturer's certification of the hydrodynamic test
- (12) If the apparatus has a fire pump or a wildland fire pump, the certification of inspection and test for the fire pump (see 13.13.1.1.5 or 13.13.1.2.4 or 15.13.1.2.4, *as applicable*)
- (13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test (see *Section 14.13*)
- (14) When the apparatus is equipped with a water tank, the certification of water tank capacity (see *Section 17.6*)
- (15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device (see *Section 20.31*)
- (16) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1910
- (17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy (see 18.10.4.2) and the final installer's certification the foam proportioning system meets this standard (see 18.11.2)
- (18) If the system has a CAFS, the documentation of the manufacturer's predelivery tests (see *Section 19.9*)
- (19) If the apparatus has a line voltage power source, the certification of the test for the power source (see 21.15.7.2)
- (20) If the apparatus is equipped with an air system, air tank certificates (see 23.5.1.2), the SCBA fill station certification (see 23.9.6), and the results of the testing of the air system installation (see 23.14.5 and 23.15.4)
- (21) For wildland fire apparatus, or structural apparatus without stability control, certification of vehicle side slope stability, including the weight distribution assumed for the calculations or as loaded on the vehicle for the tilt table test (see 7.14.3)

(22) Any other required manufacturer test data or reports

OPERATION AND SERVICE DOCUMENTS - NFPA 1900 2024 Edition, Section 7.21.2

NFPA 1900 - 7.21.2 Operations and Service Documentation.

7.21.2.1 - The contractor shall deliver with the fire apparatus complete operation and service documentation covering the completed apparatus as delivered and accepted.

7.21.2.2 - The documentation shall address at least the inspection, service, and operations of the fire apparatus and all major components thereof.

7.21.2.3 - The contractor shall also provide the following documentation for the entire apparatus and each major operating system or major component of the apparatus:

- (1) Manufacturer's name and address
- (2) Country of manufacture
- (3) Source for service and technical information
- (4) Parts replacement information
- (5) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable)
- (6) Wiring diagrams for low-voltage and line-voltage systems to include the following information:
 - (a) Pictorial representations of circuit logic for all electrical components and wiring
 - (b) Circuit identification
 - (c) Connector pin identification
 - (d) Zone location of electrical components
 - (e) Safety interlocks
 - (f) Alternator–battery power distribution circuits
 - (g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- (7) Lubrication charts
- (8) Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
- (9) Precautions related to multiple configurations of aerial devices, if applicable
- (10) Instructions regarding the frequency and procedure for recommended maintenance
- (11) Overall apparatus operating instructions
- (12) Safety considerations
- (13) Limitations of use
- (14) Inspection procedures
- (15) Recommended service procedures
- (16) Troubleshooting guide
- (17) Apparatus body, chassis, and other component manufacturer's warranties
- (18) Special data required by this standard
- (19) A safety data sheet (SDS) for any fluid that is specified for use on the apparatus
- (20) For structural fire apparatus, one copy of the latest edition of FAMA's *Fire Apparatus Safety Guide*

7.21.2.4 - The contractor shall deliver with the apparatus all manufacturers' operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

7.21.2.5 - Apparatus operator manuals shall be publicly accessible on the manufacturer's website.

7.21.2.6 - The apparatus shall include one or more of the following:

- (1) The applicable apparatus operator manual(s) stored on the apparatus and protected in a permanent, dedicated, accessible location
- (2) The applicable apparatus operator manual(s) available to be viewed on the apparatus on an accessible electronic display
- (3) A means of accessing an Internet link to the applicable operator manual(s) for viewing on a computer, tablet, or smart phone

7.21.2.7 - The apparatus operator manual shall specify the quantity and type of the following fluids used in the vehicle:

- (1) Engine oil
- (2) Engine coolant
- (3) Chassis transmission fluid
- (4) Pump transmission lubrication fluid
- (5) Pump priming system fluid, if applicable
- (6) Drive axle(s) lubrication fluid
- (7) Air conditioning refrigerant
- (8) Air conditioning lubrication oil
- (9) Power steering fluid
- (10) Cab tilt mechanism fluid
- (11) Transfer case fluid
- (12) Equipment rack fluid
- (13) CAFS air compressor system lubricant
- (14) Generator system lubricant

7.21.2.8 - The operator manual(s) shall specify all technical information needed to perform NFPA 1910 certification testing as described in **7.21.1(16)**.

7.21.2.9 - The operator manual shall address the water fording capabilities of the vehicle.

HIGHWAY PERFORMANCE NFPA 1900, 2024 Edition, Section 7.16

7.16.1 - The apparatus, when loaded to its estimated in-service weight, shall be capable of the following performance while on dry, paved roads that are in good condition:

- (1) Accelerating from 0 to 35 mph (55 km/hr) within 25 seconds on a 0 percent grade
- (2) Attaining a speed of 50 mph (80 km/hr) on a 0 percent grade
- (3) Maintaining a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent

7.16.2* - The maximum top speed of any fire apparatus with a GVWR over 33,000 lb (15,000 kg) shall not exceed either 68 mph (109 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

7.16.3 - If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 mph (95 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

7.16.4 - All wildland fire apparatus shall be capable of maneuvering across a 20 percent grade and up and down a 25 percent grade.

NFPA TAG REQUIREMENTS

- A label that states the number of personnel the vehicle is designed to carry shall be located in an area visible to the driver.
- A sign that reads "**OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION**" shall be provided and located in the chassis cab in an area that is visible from each seating position.
- An accident prevention sign that states "**OVERALL HEIGHT OF APPARATUS ___ INCHES**"
- One "Final Stage Label" shall be attached to the drivers side door jamb. The label shall certify that the complete vehicle conforms to the federal motor vehicle safety standards, which have been previously fully certified by the incomplete vehicle manufacture or by the intermediate vehicle manufacture and have not been affected by the final stage manufacture.
- An accident prevention sign that states "**DANGER: DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION - DEATH OR SERIOUS INJURY MAY RESULT**" shall be provided and installed at the rear of the apparatus.
- A label stating "**DO NOT WEAR HELMET WHILE SEATED**" shall be visible from each seating location.

WARRANTIES

Each bidder shall include a copy of their warranty with the bid proposal. The following minimum warranties shall be provided, **NO EXCEPTION.**

The finest materials and utmost care go into the fabrication of each new apparatus. By using normal care, without abuse, this equipment will give you lasting service.

Each vehicle is to be free from defects in material and workmanship, under normal use and service, for a period of (2) two years. Our obligation under this warranty is limited to replacing or repairing, as the manufacturer may elect, any part or parts thereof, which, upon examination, would be determined to be defective. Such defective parts will be replaced, free of charge and without charge for installation, to the original purchaser.

All warranty work related to the apparatus (not including vehicle chassis) is to be performed at the manufacturer's factory or at an authorized service center.

This does not obligate the manufacturer to bear the costs of transportation charges and related expenses incurred in the replacement of parts.

BODY WARRANTY

The manufacturer shall warrant the entire stainless steel body against rust and/or full corrosion perforation and metal fatigue for a period of thirty (30) years from the date of delivery to the original purchaser, provided the apparatus is used in a normal and reasonable manner.

The term "body" shall be inclusive of the following:

- Hose bed side walls
- Compartments and compartment supports
- Compartment doors, ***except roll-up doors, when specified***
- Complete subframe including pump house framing

WATER TANK WARRANTY

The contracted tank manufacturer shall warrant that the tank provided shall be of first-class workmanship, and that, under normal conditions, shall show no defects due to faulty design, workmanship, or material for the Lifetime of the vehicle to the original owner.

PUMP WARRANTY

The contracted pump manufacturer shall warrant that the pump provided shall be of first-class workmanship and that, under normal conditions, shall show no defects due to faulty design, workmanship, or materials for a period of five (5) years.

PUMP PLUMBING WARRANTY

The stainless steel plumbing components as specified and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of ten (10) years or 100,000 miles. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of delivery.

12 VOLT ELECTRICAL WARRANTY

The 12 volt electrical system and ancillary components used in the construction of the apparatus shall be warranted for a period of five (5) years. This covers failures caused by defective design or workmanship, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of five (5) years from the date of delivery.

Items specifically covered are:

- Electrical harnesses and harness installation
- Switches, circuit breakers and relays
- LED Lighting: FMVSS required and warning lights
- Electrical connectors and connections against corrosion or deterioration

Items excluded as they are covered by specific warranties supplied by the manufacturer of the components:

- Chassis electrical systems and components installed by the chassis manufacturer.
- Batteries, battery chargers, two-way radio equipment, and similar equipment.
- Periodic cleaning and tightening of battery terminal connections.
- Accident, negligence or unauthorized alteration of original equipment.

PAINT WARRANTY

The paint on the unit will be provided with a seven (7) year non-pro-rated paint finish guarantee which will cover the finish for the following items:

- Peeling or delamination of the top coat and/or other layers of paint.
- Cracking or checking.
- Loss of gloss caused by defective finishes which are covered by this guarantee.

CHASSIS WARRANTY

Chassis shall be warranted by the chassis manufacturer, as per the chassis manufacturer's issued warranty.

100% WARRANTY ON ALL OTHER ITEMS FOR (2) TWO YEARS.

THIS WILL NOT APPLY

1. To normal maintenance services or adjustments.
2. To damage caused by negligence of normal maintenance.
3. To any vehicle which shall have been repaired or altered outside our factory in any way, so as, in our judgement, to affect its stability, nor which has been subjected to negligence or accident, nor to any vehicle made by us which shall have been operated at a speed exceeding the factory-rated speed, or loaded beyond the factory-rated load capacity.
4. To major components such as purchased chassis and associated equipment furnished with chassis, signaling devices, generators, batteries, or other trade accessories, inasmuch as they are usually warranted separately by their respective manufacturers or to ancillary equipment used in rescue or firefighting.
5. To loss of time or use of vehicle, inconvenience or other incidental expenses.

THIS WARRANTY IS MADE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, WITH RESPECT TO QUALITY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR APPLICATION.

SINGLE SOURCE WARRANTY COORDINATION

In order to protect the purchaser from divided warranty responsibility between chassis and body manufacturers, the dealer will coordinate the warranty for the specified vehicle from bumper to

bumper. While all fire apparatus have individual component warranties, we will act as the sole source warranty coordinator on the entire vehicle. This shall include the cab shell, chassis assembly, and complete body structure.

DELIVERY & DEMONSTRATION

Apparatus will be delivered under its own power to ensure proper break in of all components while still under warranty.

A qualified delivery engineer representing will deliver the apparatus and remain with the fire department for one day to demonstrate the apparatus and provide initial instruction to representatives of the fire department regarding the operation, care, and maintenance of the apparatus and equipment supplied.

PRE-CONSTRUCTION CONFERENCES AND INSPECTION TRIPS

Pre-Construction Conferences and Inspection trips shall be provided as follows:

There shall be at least two Pre-Construction Conferences, to be held at a mutually agreeable place:

- One (1) before the chassis is ordered
- One (1) before manufacturing begins on the body

Two (2) trips shall be provided. Each trip will cover cost for transportation, meals, and lodging for two (2) people each trip. The trips will take place at the following time periods:

- (1) Pre-paint Inspection at the bidder's factory.
- (1) Final inspection upon completion of apparatus at the bidder's factory

OVERALL APPARATUS DIMENSIONS AND REQUIREMENTS

6. Wheelbase of chassis:
7. Cab-to-axle dimension of chassis:
8. Overall length of apparatus:
9. Overall width of apparatus body:
10. Overall height of apparatus:
11. Overall length of body including rear step:
12. Front overhang from center of front axle:
13. Rear overhang from center of rear axle:

14. Pump panel width:

CHASSIS SPECIFICATION

MODEL

The chassis shall be a Custom or Metro Star model. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2027 or newer model year.

COUNTRY OF SERVICE

The chassis shall be put in service in the country of United States of America (USA).

The chassis will meet applicable U.S.A. federal motor vehicle safety standards per CFR Title 49 Chapter V Part 571 as clarified in the incomplete vehicle book per CFR Title 49 Chapter V Part 568 Section 4 which accompanies each chassis. The chassis manufacturer is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from the chassis manufacturer or their OEM needed to be in compliance with those regulations.

CAB AND CHASSIS LABELING LANGUAGE

The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English. All applicable caution, warning, and safety notice labels shall be Innovative Controls brand. Where applicable to the location within the specific layout and label package of the cab and chassis, the labels shall include decorative chrome bezels. Designs shall include bezels that fit individual labels or packaged configurations of labels in certain common locations.

APPARATUS TYPE

The apparatus shall be a pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 750 gallons per minute (3000 L/min). The apparatus shall include a water tank and hose body whose primary purpose is to combat structural and associated fires.

VEHICLE TYPE

The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

VEHICLE ANGLE OF APPROACH PACKAGE

The angle of approach of the apparatus shall be a minimum of 8.00 degrees.

NFPA1901 Angle of Approach definition:

“To determine the angle of approach, place a thin steel strip against the front of the tires where they touch the ground or stretch a tight string from one front tire to the other at the front where they touch the ground. Determine the lowest point (component or equipment) on the vehicle forward of the front tire that would make the smallest angle of approach. Hang a plumb bob from the lowest point and mark the point on the ground where the point of the plumb bob touches. Measure the vertical distance from the ground to the point where the plumb bob was hung (distance V). Measure the horizontal distance from the plumb bob point to the steel strip or string running from front tire to front tire (distance H). Divide the vertical distance by the horizontal distance. The ratio of V/H is the tangent of the angle of approach. If the ratio is known, the angle of approach can be determined from a table of trigonometric functions of angles or from a math calculator. The standard requires a minimum angle of approach of 8.00 degrees: since the tangent of 8.00 degrees is 0.1405, if V divided by H is 0.1405 or larger, the angle of approach is 8.00 degrees or greater.”

AXLE CONFIGURATION

The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 21,500 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be 30,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

PUMP PROVISION

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location.

WATER & FOAM TANK CAPACITY

The chassis shall include a carrying capacity of a minimum of 1000 gallons (3785 liters.) The water and/or foam tank(s) shall be supplied and installed by the apparatus manufacturer.

WARRANTY

Purchaser shall receive a Custom Chassis Two (2) Years or 36,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0102. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

CAB STYLE

The cab shall be a custom, fully enclosed, LLFD model with a 10.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to ten (10) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

All interior and exterior seams shall be sealed for optimum noise reduction and to provide the most favorable efficiency for heating and cooling retention.

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19 inch thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 147.10 inches with 70.00 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 67.88 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.25 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 32.25 inches wide X 61.00 inches high, from the cab floor to the top of the door opening.

The cab shall incorporate a progressive two (2) step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely.

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.13 inches wide. The intermediate step shall measure approximately 8.50 inches deep X 32.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure approximately 11.50 inches deep X 20.44 inches wide. The intermediate step shall measure approximately 10.25 inches deep X 22.75 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.80 inches.

OCCUPANT PROTECTION

An IMMI 4Front® occupant protection system shall be installed in the vehicle's cab. The system shall inflate up to three (3) air bags in the following locations as applicable by customer specification:

- Steering wheel air bag to protect the head and neck of the driver
- Knee bolster air bag to protect the driver's legs
- Knee bolster air bag to protect the officer's legs

The air bags shall use a combination of high-pressure stored argon and oxygen with a pyrotechnic charge for initiation to inflate the bags remain inflated for several seconds.

The system shall be connected to the crash detection sensor that will also activate the driver and first officer integrated belt pretensioners if it detects a frontal crash.

A RollTek™ rollover occupant protection system shall be installed in the apparatus cab. The system shall include an integrated roll sensor (IRS).

The IRS shall be a microprocessor-controlled solid-state sensing device that utilizes vehicle-specific calibrations to detect rollovers. The IRS shall be equipped with pyrotechnic loops for connection to the protective countermeasures which shall include seat integrated side roll airbags (SRA), integrated seat belt pretensioners, and air seat pull-downs (S4S), in applicable occupant seat positions.

The IRS shall continuously monitor the truck's acceleration and angle, and upon detection of an imminent roll-over, shall activate protective countermeasures in a pre-programmed sequence. In addition, the IRS shall also act as a data recorder to record crash events for post-crash evaluation.

CAB FRONT FASCIA

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate which shall be an integral part of the cab.

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

FRONT GRILLE

The front fascia shall include a box style, 304 stainless steel front grille 44.45 inches wide X 33.50 inches high X 1.50 inches deep. The grille shall include a minimum free air intake of 732.00 square inches. The upper portion of the grille shall be hinged to provide service access behind the grille.

CAB UNDERCOAT

There shall be undercoating applied to the underside of the cab which provides an abrasion resistant coating for protection against corrosion caused by moisture, salt, alkalis and galvanic reaction.

CAB SIDE DRIP RAIL

There shall be a drip rail along the top radius of each cab side. The drip rails shall help prevent water from the cab roof running down the cab side.

CAB PAINT EXTERIOR

The cab exterior shall be painted two tone per customers specified paint colors following the RFG-SR-001 paint standards.

CAB PAINT PROCESS/MANUFACTURER

The cab shall be painted with PPG Industries paint prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

All metal surfaces on the cab shall be mechanically etched by sanding disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once all imperfections on the exterior surfaces are removed and sanded smooth, body fillers shall be applied to the cab on all surfaces that require a critically aesthetic finish and sanded smooth.

The entire cab shall then be coated with a high quality base primer that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be sanding the cab to a smooth finish followed by sealing the seams with an automotive seam sealer. The minimum thickness of the primer coat after sanding shall be 2.50 mils with a maximum thickness of 5.00 mils.

The cab shall then be painted the specific color(s) designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on an emergency scene. The paint shall have a minimum thickness of 1.00 mils with a maximum of 4 mils, followed by a clear top coat with a minimum of 2.5 mils and a maximum of 3.5 mils. The entire cab shall then be baked to speed the curing process of the coatings.

CAB PAINT PRIMARY/LOWER COLOR

The lower paint color shall be PPG FBCH 71663 Red.

CAB PAINT SECONDARY/UPPER COLOR

The secondary/upper paint color shall be PPG FBCH 9000 black.

CAB PAINT EXTERIOR BREAKLINE

The upper and lower paint shall meet at a breakline on the cab which shall be located approximately 1.00 inch below the door windows on each side of the cab. The breakline shall curve down at the front cab corners to approximately 5.00 inches below the windshields on the front of the cab.

CAB PAINT PINSTRIPE

A 0.50 inch wide gold leaf tape with black borders shall be applied on the break line between the two different colored surfaces.

CAB PAINT WARRANTY

Purchaser shall receive a Paint and Finish (Exterior Clear coated) Ten (10) Years limited warranty in accordance with, and subject to, warranty certificate RFW0710. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

CAB PAINT INTERIOR

The visible interior cab structure surfaces shall be painted with a multi-tone onyx black texture finish.

CAB ENTRY DOORS

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall be constructed of extruded aluminum with a nominal thickness of 0.13 inch. The exterior skins shall be constructed of 0.13 inch aluminum plate.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

CAB ENTRY DOOR TYPE

All cab entry doors shall be barrier clear design resulting in exposed lower cab steps. The doors shall provide approximately 32.00 inches of clearance from the ground to the bottom of the door

so cab doors may be opened un-hindered by most obstacles encountered, such as guard rails along interstate highways.

Entry doors shall include Pollak mechanical plunger style switches for electrical component activation.

CAB INSULATION

The cab ceiling and walls shall include a nonwoven polyester fiber insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

LH EXTERIOR REAR COMPARTMENT

The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 12.31 inches wide X 31.19 inches high. The compartment size shall be 13.34 inches wide X 31.19 inches high.

LH EXTERIOR REAR COMPARTMENT UNDER FLOOR DEPTH

The cab shall offer an exterior compartment on the left side of the cab behind the rear door with a depth of 21.19 inches under the cab floor. There shall be a 3.00 inches wide fore/aft provisional notch on the forward wall of the under floor compartment for the frame mounted power distribution box. The notch shall extend through half the compartment depth under the floor.

LH EXTERIOR REAR COMPARTMENT ACCESS

The cab shall offer rear exterior compartment access behind the doors on the left side of the cab via a 1.50 inches thick hinged box pan style flush mount door. There shall be a switch to activate compartment lighting and the open compartment warning light in the cab in the event the door is left ajar.

LH EXTERIOR REAR COMPARTMENT HARDWARE

The cab rear exterior compartment access door on the left side of the cab shall include a chrome-plated bent D-ring slam latch and stainless-steel hinge.

LH EXTERIOR REAR COMPARTMENT ACCESS

The cab rear exterior compartment access door on the left side of the cab shall include a DA sanded aluminum inner panel.

LH EXTERIOR REAR COMPARTMENT DOOR CHECK STRAP

The cab rear exterior compartment access door on the left side of the cab shall include a strap added to the compartment to only allow it to open approximately 90 degrees.

LH EXTERIOR REAR COMPARTMENT DEPTH ABOVE FLOOR

The cab shall offer an exterior compartment on the left side of the cab behind the rear door that shall be open into the cab crew area above the floor into a seat frame or wall compartment access area.

LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) clear LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be sized appropriately to illuminate all usable surfaces in the compartment.

LH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the left hand exterior compartment shall have a DA sanded finish.

RH EXTERIOR REAR COMPARTMENT

The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 12.31 inches wide X 31.19 inches high. The compartment size shall be 13.34 inches wide X 31.19 inches high.

RH EXTERIOR REAR COMPARTMENT UNDER FLOOR DEPTH

The cab shall offer an exterior compartment on the right side of the cab behind the rear door with a depth of 21.19 inches under the cab floor. There shall be a 3.00 inches wide fore/aft provisional notch on the forward wall of the under-floor compartment for the frame mounted power distribution box. The notch shall extend through half the compartment depth under the floor.

RH EXTERIOR REAR COMPARTMENT ACCESS

The cab shall offer rear exterior compartment access behind the doors on the right side of the cab via a 1.50 inches thick hinged box pan style flush mount door. There shall be a switch to activate compartment lighting and the open compartment warning light in the cab in the event the door is left ajar.

RH EXTERIOR REAR COMPARTMENT HARDWARE

The cab rear exterior compartment access door on the right side of the cab shall include a chrome-plated bent D-ring slam latch and stainless-steel hinge.

RH EXTERIOR REAR COMPARTMENT ACCESS

The cab rear exterior compartment access door on the right side of the cab shall include a DA sanded aluminum inner panel.

RH EXTERIOR REAR COMPARTMENT DOOR CHECK STRAP

The cab rear exterior compartment access door on the right side of the cab shall include a strap added to the compartment to only allow it to open approximately 90 degrees.

RH EXTERIOR REAR COMPARTMENT DEPTH ABOVE FLOOR

The cab shall offer an exterior compartment on the right side of the cab behind the rear door that shall be open into the cab crew area above the floor into a seat frame or wall compartment access area.

RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) clear LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be sized appropriately to illuminate all usable surfaces in the compartment.

RH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the right-hand exterior compartment shall have a DA sanded finish.

CAB STRUCTURAL WARRANTY

Purchaser shall receive a Cab Structure (Aluminum) Ten (10) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0602. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

CAB TEST INFORMATION

The cab shall have successfully completed the preload side impact, static roof load application and frontal impact without encroachment to the occupant survival space when tested in accordance with Section 4 of SAE J2420 COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks, Section 5 of SAE J2422 Cab Roof Strength Evaluation Quasi –Static Loading Heavy Trucks and ECE R29 Uniform Provisions Concerning the Approval of Vehicles with regard to the Protection of the Occupants of the Cab of a Commercial Vehicles Annex 3 Paragraph 5.

The above tests have been witnessed by and attested to by an independent third party. The test results were recorded using cameras, high speed imagers, accelerometers and strain gauges. Documentation of the testing shall be provided upon request.

ELECTRICAL SYSTEM

The chassis shall include a single starting electrical system which shall include a 12 volt direct current multiplexing system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311 degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.

APPARATUS WIRING PROVISION

An apparatus wiring panel shall be installed in the center dash area behind the rocker switch panel which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 25 amp, three (3) 10 amp, and one (1) 15 amp circuit, with relays and breakers with trigger wires which shall be routed to the rocker switch panel.

LOAD MANAGEMENT SYSTEM

The apparatus load management shall be performed by the included multiplex system. The multiplex system shall also feature the priority of sequences and shall shed electrical loads based on the priority list specifically programmed.

DATA RECORDING SYSTEM

The chassis shall have a Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901 and shall be integrated with the ControlMaxx Multiplex electrical system. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch Position
- Time
- Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system. The laptop connection shall be a panel mounted female type C USB connection point, mounted in dash.

ACCESSORY POWER

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40-amp battery direct load. One (1) power stud shall be capable of carrying up to a 15-amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud.

The Master power distribution box (MPD) shall include four (4) fuses. The battery direct bus bar shall include one (1) 300-amp fuse labeled E-PUMP and one (1) 300-amp fuse labeled PUMP PRIMER. The master power bus bar shall include one (1) 200-amp fuse labeled PUMP MASTER and one (1) 300-amp fuse labeled BODY MASTER. Each bus bar stud is size 5/16”.

AUXILIARY ACCESSORY POWER

An auxiliary set of power and ground studs shall be provided and installed behind the electrical center cover with a 40 amp breaker. The studs shall be 0.38 inch diameter and capable of carrying up to a 40 amp battery direct load.

ADDITIONAL ACCESSORY POWER

An additional set of power and ground studs shall be provided and installed behind the electrical center cover with a 40 amp breaker. The studs shall be 0.38 inch diameter and capable of carrying up to a 40 amp battery direct load.

EXTERIOR ELECTRICAL TERMINAL COATING

All terminals exposed to the elements will be sprayed with a high visibility protective rubberized coating to prevent corrosion.

ELECTRICAL SYSTEM WARRANTY

Purchaser shall receive an Electrical System Two (2) Years or 36,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0202. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

ENGINE

The chassis engine shall be a Cummins heavy heavy duty (HHD) certified X10 engine. The X10 engine shall be an in-line six (6) cylinder, four-cycle diesel-powered engine. The engine shall offer a rating of 450 horsepower at 1800 RPM and shall be governed at 1900 RPM. The torque rating shall feature 1650-foot pounds of torque at 1000 RPM.

The engine shall feature a VGT™ Turbocharger, a high-pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2027 emissions standards.

A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure, engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

Until the 2027 EPA engine integration is finalized, option availability and body design relative to engine and aftertreatment are subject to change. Additional costs associated with the 2027 EPA engine will be passed on to the end user. No exceptions.

CAB ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 25.50 inches high.

DIESEL PARTICULATE FILTER CONTROLS

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit. The controls shall be located on the digital dash display.

ENGINE PROGRAMMING HIGH IDLE SPEED

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with an automatic high-idle speed control which shall be pre-set to operate the engine at a specified RPM to increase alternator output if the system voltage drops to 12.5 volts with multi-plex wired chassis and 12.8 volts using load manager with conventional wiring. This device shall automatically operate only when the engine is running, the transmission is in neutral, and with the parking brake set. The automatic high idle will stay engaged for a minimum of ten (10) minutes and until the system, voltage has reached 13.0 volts. Application of the service brake will override the automatic high idle and reset timer. The vehicle shall be equipped with a high-idle speed rocker switch. It shall be pre-set so when activated, it will operate the engine at the specified RPM to increase alternator output. This device shall operate only when the engine is running, the transmission is in neutral, and with the parking brake set. When automatically engaged the high idle shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake pedal is released, or when the transmission is placed in neutral. Switch shall not override automatic high idle between voltage parameters during timed cycle.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

The engine shall include programming which will govern the top speed of the vehicle.

AUXILIARY ENGINE BRAKE

A compression brake, for the six (6) cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine compression brake shall activate upon 0% accelerator when in operation mode and actuate the vehicle's brake lights.

The engine shall utilize a variable geometry turbo (VGT) as an integrated auxiliary engine brake to offer a variable rate of exhaust flow, which when activated in conjunction with the compression brake shall enhance the engine's compression braking capabilities.

AUXILIARY ENGINE BRAKE CONTROL

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The compression brake shall be controlled through an on/off switch and a low/medium/high selector switch.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

FLUID FILLS

The front of the chassis shall accommodate fluid fill for the engine oil through the grille. This area shall also accommodate a check for the engine oil. The transmission, power steering, and coolant fluid fills and checks shall be under the cab. The windshield washer fill shall be accessible through the front left side mid step.

ENGINE DRAIN PLUG

The engine shall include an original equipment manufacturer installed oil drain plug.

ENGINE WARRANTY

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

REMOTE THROTTLE CONTROL

A Fire Research In Control 400 pressure sensor governor shall be provided for the electronic engine. It shall include a remote mountable control head.

The In Control shall regulate the pump pressure and monitor all essential engine parameters.

LED readouts shall display RPM, PSI, pump discharge and intake pressure, engine oil pressure, engine temperature, transmission temperature and battery voltage. An audible alarm out put shall also be part of the system.

The rpm increase and decrease will be controlled by control knob on the face of the In Control 400.

ENGINE PROGRAMMING REMOTE THROTTLE

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

ENGINE PROGRAMMING IDLE SPEED

The engine low idle speed will be programmed at 700 rpm.

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator. This ember separator shall be designed to protect the downstream air filter from embers using a combination of unique flat and crimped metal screens packaged in a heavy duty galvanized steel frame. This multilayered screen shall trap embers and allow them to burn out before passing through the pack.

The engine air intake system shall also include an air cleaner mounted above the radiator. This air cleaner shall utilize a replaceable dry type filter element designed to prevent dust and debris from being ingested into the engine. A service cover shall be provided on the housing, reducing the chance of contaminating the air intake system during air filter service.

The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, Horton fully variable type fan drive with SmartClutch J-1939 CAN controller. The clutch fan shall override the thermostatic variable speed and function as full on automatically in pump mode.

The variable speed fan clutch only engages at the amount needed for proper cooling to facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail-safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure. The fan speed shall include a J-1939 CAN clutch controller to receive signal from the engine control module to activate at variable rates of speed. Variable speeds shall be set through thermostatic and engine speed signals to run as efficiently and quietly as required to maintain temperature.

ENGINE COOLING SYSTEM

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the emergency response industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall be comprised of a charge air cooler to radiator serial flow package that provides the maximum cooling capacity for the specified engine as well as serviceability. The main components shall include a surge tank, a charge air cooler bolted to the front of the radiator, recirculation shields, a shroud, a fan, and required tubing.

The radiator shall be a down-flow design constructed with aluminum cores, plastic end tanks, and a steel frame. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injected molded polymer fan with a three (3) piece fiberglass fan shroud.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and rearward oriented sight glass to observe coolant in the system. A cold fill and observation line shall be included within the frame mounted translucent recovery bottle to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements and allows for expansion and recovery of coolant into a separate integral expansion chamber.

All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with cast tanks. All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufacturer's requirements.

The radiator and charge air cooler shall be removable through the bottom of the chassis.

ENGINE COOLING SYSTEM PROTECTION

The engine cooling system shall include a recirculation shield designed to act as a light duty skid plate below the radiator to provide additional protection for the engine cooling system from light impacts, stones, and road debris. The skid plate shall be painted to match the frame components.

ENGINE COOLANT

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees Fahrenheit.

Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

ELECTRONIC COOLANT LEVEL INDICATOR

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

COOLANT HOSES

The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include stainless steel constant torque band clamps.

ENGINE EXHAUST SYSTEM

The exhaust system shall include a side-in end-out horizontally mounted dual module after treatment device, and downpipe from the charge air cooled turbo. The side inlet DPF canister allows the entire system to be pulled forward. The dual module shall include a diesel particulate filter (DPF), urea dosing module (UL2), and a selective catalytic reduction (SCR) catalyst to meet current EPA standards.

The system shall utilize 0.07 inch thick stainless steel exhaust tubing between the engine turbo and the DPF. Zero leak clamps seal all system joints between the turbo and DPF.

The DPF, the decomposition tube, and the SCR canister through the end of the tailpipe shall be connected with zero leak clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires.

The exhaust system after treatment modules shall be mounted below the frame, with the DPF in the inboard position and the SCR rearward in the inboard position.

Disclaimer - Until the 2027 EPA engine integration is finalized, available options and body design specifications related to the engine and aftertreatment system are subject to change. This may include, but is not limited to, wheelbase dimensions, centerline of suction for pumps, and pump configurations. Any additional costs resulting from the 2027 EPA engine requirements will be passed on to the end user - No exceptions.

DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of five (5) usable gallons and shall be mounted on the left-hand side of the chassis frame behind the rear crew door entry steps.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall run through lines in the tank to help prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen.

The tank fill tube shall be routed under the rear of the cab with the fill neck and splash guard accessible in the top rear step.

ENGINE EXHAUST ACCESSORIES

The vehicle will include a MagneGrip exhaust extraction system collar which shall be shipped loose.

ENGINE EXHAUST WRAP

The exhaust tubing between the engine turbo and the diesel particulate filter (DPF) shall be wrapped with a thermal cover in order to retain the necessary heat for DPF regeneration. The exhaust wrap shall also help protect surrounding components from radiant heat which can be transferred from the exhaust.

The exhaust flex joint shall not include the thermal exhaust wrap.

EMISSIONS SYSTEMS WARRANTY

Purchaser shall receive a Regulated Emissions Systems ten (10) years, or 450,000 miles, or 22,000 engine hours limited warranty for heavy heavy-duty engines in accordance with, and subject to, warranty certificate RFW0144. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

REGULATED EMISSIONS WARRANTY TIRES

Purchaser shall receive a regulated emissions tires two (2) years or 24,000 miles limited warranty in accordance with, and subject to, warranty certificate RFW0145. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

REGULATED EMISSIONS WARRANTY AIR CONDITIONING

Purchaser shall receive a regulated emissions air conditioning five (5) years or 100,000 miles limited warranty in accordance with, and subject to, warranty certificate RFW0146. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

TRANSMISSION

The drive train shall include an Allison model EVS 4000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters which shall offer Allison formulated Castrol TranSynd™ synthetic transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The transmission gear ratios shall be:

1st	3.51:1
2nd	1.91:1
3rd	1.43:1
4th	1.00:1
5th	0.74:1
6th	0.64:1 (if applicable)
Rev	4.80:1

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.

TRANSMISSION FEATURE PROGRAMMING

The Allison Gen V/VI-E transmission EVS group package number 127 shall contain the 198 vocational package in consideration of the duty of this apparatus as a pumper. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide.

A transmission interface connector shall be provided in the cab. This package shall contain the following input/output circuits to the transmission control module. The Gen V/VI-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

<u>Function ID</u>	<u>Description</u>	<u>Wire assignment</u>
Inputs		
C	PTO Request	142
J	Fire Truck Pump Mode (4th Lockup)	122 / 123 Outputs
C	Range Indicator	145 (4th)
G	PTO Enable Output	130
	Signal Return	103

TRANSMISSION SHIFT SELECTOR

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall have a graphical Vacuum Florescent Display (VFD) capable of displaying two lines of text. The shift selector shall provide mode indication and a prognostic indicator (wrench symbol) on the digital display. The prognostics monitor various operating parameters and shall alert you when a specific maintenance function is required.

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

The transmission fluid shall be monitored electronically.

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

TRANSMISSION COOLING SYSTEM

The transmission shall include a water to oil cooler system located in the cooling loop between the radiator and the engine. The transmission cooling system shall meet all transmission manufacturer requirements. The transmission cooling system shall feature continuous flow of engine bypass water to maintain uninterrupted transmission cooling.

TRANSMISSION DRAIN PLUG

The transmission shall include an original equipment manufacturer installed magnetic transmission fluid drain plug.

TRANSMISSION WARRANTY

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

PTO LOCATION

The transmission shall have two (2) power take off (PTO) mounting locations, one (1) in the 8:00 o'clock position and one (1) in the 1:00 o'clock position.

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with MSI 1810 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat[®]. The drivelines shall include Meritor brand u-joints with thrust washers.

MIDSHIP PUMP / GEARBOX

A temporary jackshaft driveline and pump mounting brackets shall be installed by the chassis manufacturer to accommodate the midship split shaft pump as specified by the apparatus manufacturer.

MIDSHIP PUMP / GEARBOX MODEL

The midship pump/gearbox provisions shall be for a Hale QMAX-XS pump.

MIDSHIP PUMP GEARBOX DROP

The Hale pump gearbox shall have an "L" (long) drop length.

MIDSHIP PUMP RATIO

The ratio for the midship pump shall be 2.28:1 (23).

MIDSHIP PUMP LOCATION C/L SUCTION TO C/L REAR AXLE

The midship pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 80.00 inches.

PUMP SHIFT CONTROLS

One (1) pump shift control panel cutout for Innovative Controls shifter model 3001681 or 3001683 shall be provided on the driver's dash panel for customer installation of the pump shift controls.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fleetguard FS20121 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

A secondary fuel filter shall be included as approved by the engine manufacturer.

FUEL LINES

The fuel system supply and return lines installed from the fuel tank to the engine shall be black textile braided lines which are reinforced with braided high tensile steel wire. The fuel lines shall be connected with reusable steel fittings.

FUEL SHUTOFF VALVE

There shall be two (2) fuel shutoff valves which shall be installed, one (1) in the fuel draw line at the primary fuel filter and one (1) in the fuel outlet line at the primary fuel filter to allow the fuel filters to be changed without loss of fuel to the fuel pump.

A third fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.

ELECTRIC FUEL PRIMER

Integral to the engine assembly is an electric lift pump that serves the purpose of pre-filter fuel priming.

FUEL TANK

The fuel tank shall have a capacity of fifty (50) gallons and shall measure 35.00 inches in width X 15.00 inches in height X 24.00 inches in length.

The baffled tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the upper tank mounting brackets. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

FUEL TANK MATERIAL AND FINISH

The fuel tank shall be constructed of 12 gauge aluminized steel. The exterior of the tank shall be powder coated black and then painted to match the frame components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 Method B, results to be 5B minimum. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794, results to be 5B minimum.

Any proposals offering painted fuel tanks with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.

FUEL TANK STRAP MATERIAL

The fuel tank straps shall be constructed of ASTM A-36 hot-dip galvanized steel. The fuel tank straps shall include a natural galvanized finish.

FUEL TANK FILL PORT

The fuel tank fill ports shall be offset with the left fill port located in the rearward position and the right fill port located in the middle position on the fuel tank.

FUEL TANK SERVICEABILITY PROVISIONS

The chassis fuel lines shall have additional length provided so the tank can be easily lowered and removed for service purposes. The additional 8.00 feet of length shall be located above the fuel tank and shall be coiled and secured. The fuel line fittings shall be pointed towards the right side (curbside) of the chassis.

FUEL TANK DRAIN PLUG

A 0.5 inch NPT magnetic drain plug shall be centered in the bottom of the fuel tank.

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 21,500 pounds FAWR.

FRONT AXLE WARRANTY

The front axle shall be warranted by Meritor for five (5) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

FRONT WHEEL BEARING LUBRICATION

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

FRONT SHOCK ABSORBERS

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.

Proposals offering the use of conventional twin tube or "road sensing" designed shocks shall not be considered.

FRONT SUSPENSION

The front suspension shall include a ten (10) leaf spring pack in which the longest leaf measures 54.00 inch long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.

STEERING COLUMN/ WHEEL

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25 inch telescopic adjustment, and an 18.00 inch, four (4) spoke steering wheel located at the driver's position. The steering wheel shall be covered with black polyurethane foam padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

POWER STEERING PUMP

The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type. The power steering system shall include oil to air passive cooler.

FRONT AXLE CRAMP ANGLE

The chassis shall have a front axle cramp angle of 48-degrees to the left and 44-degrees to the right.

Note: Addition of optional equipment may require cramp angle to be reduced.

POWER STEERING GEAR

The power steering gear shall be a TRW model TAS 65 with an assist cylinder.

CHASSIS ALIGNMENT

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

REAR AXLE

The rear axle shall be a Meritor model RS-30-185 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 33,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.56 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR AXLE WARRANTY

The rear axle shall be warranted by Meritor for five (5) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

REAR AXLE DIFFERENTIAL CONTROL

A driver controlled differential lock shall be installed on the rear axle. This feature shall allow the main differential to be locked and unlocked when encountering poor road or highway conditions, where maximum traction is needed, for use at speeds no greater than 25 MPH. The differential lock shall be controlled by a locking rocker switch on the switch panel. The light on the switch shall illuminate with positive engagement of the differential control.

VEHICLE TOP SPEED

The top speed of the vehicle shall be approximately 68 MPH +/-2 MPH at governed engine RPM.

REAR SUSPENSION

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type conventional multi-leaf spring suspension, with 57.50 inch X 3.00 inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided.

The rear suspension capacity shall be rated from 21,000 to 31,500 pounds.

REAR SHOCK ABSORBERS

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the rear suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.

Proposals offering the use of conventional twin tube or "road sensing" designed shocks shall not be considered.

TIRE INTERMITTENT SERVICE RATING

The chassis shall be rated using Intermittent Service ratings provided to the emergency vehicle market by the tire manufacturers as the basis for determining the maximum vehicle load and speed.

FRONT TIRE

The front tires shall be Michelin 385/65R22.5 "L" tubeless radial X Multi HL Z regional tread.

The front tire stamped load capacity shall be 22,000 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 130 pounds per square inch.

The Michelin Intermittent Service Rating maximum load capacity shall be 23,540 pounds per axle with a maximum speed of 68 miles per hour when properly inflated to 130 pounds per square inch.

The Michelin Intermittent Service Rating maximum speed capacity shall be 22,000 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 130 pounds per square inch.

The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty (50) miles of continuous operation under maximum recommended payload, or without

stopping for at least twenty (20) minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty (50) miles of travel.

REAR TIRE

The rear tires shall be Michelin 315/80R-22.5 20PR "L" tubeless radial XDN2 Grip all weather tread.

The rear tire stamped load capacity shall be 33,080 pounds per axle with a nominal speed rating of 75 miles per hour when properly inflated to 130 pounds per square inch.

The Michelin Intermittent Service Rating maximum load capacity shall be 35,396 pounds per axle with a maximum speed of 75 miles per hour when properly inflated to 130 pounds per square inch.

The Michelin Intermittent Service Rating maximum speed capacity shall match the nominal speed rating.

The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to no more than fifty (50) miles of continuous operation under maximum recommended payload, or without stopping for at least twenty (20) minutes. The emergency vehicle must reduce its speed to no more than 50 MPH after the first fifty (50) miles of travel.

REAR AXLE RATIO

The rear axle ratio shall be 4.56:1.

TIRE PRESSURE INDICATOR

There shall be electronic chrome LED valve caps shipped loose for installation by the OEM which shall illuminate with a red LED when tire pressure drops 8psi provided. The valve caps are self-calibrating and set to the pressure of the tire upon installation.

FRONT WHEEL

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch aluminum wheels. The outer face of the wheels shall feature Alcoa's Dura-Bright® finish as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

REAR WHEEL

The outer rear wheels shall be Alcoa hub piloted, 22.50 inch X 9.00 inch aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment as an integral part of the wheel. The inner rear wheels shall be Alcoa hub piloted, 22.50 inch X 9.00 inch aluminum wheels with a bright machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

BALANCE WHEELS AND TIRES

All of the wheels and tires, including any spare wheels and tire assemblies, shall be dynamically balanced.

WHEEL TRIM

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder.

The lug nut covers, baby moons, and high hats shall be RealWheels® brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.

TIRE CHAINS

Onspot brand six (6) strand automatic ice chains shall be installed on the rear axle of the chassis to provide instant traction while traveling on ice and snow at speeds below 35 MPH.

TIRE CHAINS ACTIVATION

The tire chain system shall be activated by a locking switch on the dash to deter accidental activation. The light on the switch shall illuminate when the tire chains are engaged. The tire chains shall be interlocked with the transmission and shall engage only if the vehicle is traveling 30 MPH or less. After traveling over 30 MPH, the vehicle must be reduced to a speed below 5 MPH for the tire chains to be engaged or re-engaged.

BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include, at a minimum, a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A four (4) sensor, four (4) modulator anti-lock braking system (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically

disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Additional safety shall be accommodated through Automatic Traction Control (ATC) which shall be installed on the single rear axle. The ATC system shall apply the ABS when the drive wheels lose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

A momentary rocker style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light and the light on the rocker switch shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

FRONT BRAKES

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17.00 inch vented rotors.

REAR BRAKES

The rear brakes shall be Meritor 16.50 inch X 8.63 inch S-cam drum type. The brakes shall feature a cast iron shoe.

PARK BRAKE

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

PARK BRAKE CONTROL

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake.

The parking brake actuation valve shall be mounted to the left side of the engine tunnel integrated into the transmission shift pod console within easy access of the driver.

REAR BRAKE SLACK ADJUSTERS

Haldex rear brake automatic slack adjusters shall be installed on the axle.

AIR DRYER

The brake system shall include a Wabco System Saver 1200 air dryer with an integral 100 watt heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be located on the right hand frame rail forward of the front wheel behind the right hand cab step.

FRONT BRAKE CHAMBERS

The front brakes shall be provided with MGM type 24 long stroke brake chambers.

REAR BRAKE CHAMBERS

The rear axle shall include TSE 30/36 brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 36 brake chamber has a 36.00 square inch effective area.

AIR COMPRESSOR

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

AIR GOVERNOR

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be located on the air dryer bracket.

MOISTURE EJECTORS

Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system.

AIR SUPPLY LINES

The air system on the chassis shall be plumbed with color coded reinforced nylon tubing air lines. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Push to connect type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

REAR AIR TANK MOUNTING

If a combination of wheel base, air tank quantity, or other requirements necessitate the location of one or more air tanks to be mounted rear of the fuel tank, these tank(s) will be mounted perpendicular to frame.

WHEELBASE

The chassis wheelbase shall be 187.00 inches.

REAR OVERHANG

The chassis rear overhang shall be 47.00 inches.

FRAME

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

Proposals calculating the frame strength using the "box method" shall not be considered.

Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

Any proposals not including additional reinforcement for each cross member shall not be considered.

All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.

FRAME PAINT

The frame shall be hot dip galvanized prior to assembly and attachment of any components. The components that shall be galvanized shall include:

- Main frame "C" channel or channels
- Front splayed rails and fish plates

- Cross members (excluding suspension cross members)
- Cross member gussets
- Fuel tank mounting brackets
- Fuel tank straps (unless material/finish is specified in 3130 subcat)
- Air tank mounting brackets (unless material/finish is specified in 3205, 3305, or 2232 subcat)
- Exhaust mounting brackets
- Air dryer bracket
- Air cleaner skid plate (if applicable)
- Radiator skid plate (if applicable)
- Battery supports
- Battery trays (unless material/finish is specified in 5106 subcat)
- Battery covers (unless material/finish is specified in 5107 subcat)

The frame parts which are not galvanized shall be powder coated prior to any attachment of components. Parts which shall be powder coated shall include but are not limited to:

- Bumper extensions
- Steering gear bracket
- Air tanks (unless color coded tanks are specified in 3205 subcat)

Other non-galvanized under carriage components which are received from the suppliers with coatings already applied shall include but are not limited to:

- Suspension components
- Front and rear axles

All powder coatings, primers and paint used on the non-galvanized components shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-curved pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils.

FRAME ASSEMBLY STRUCTURAL

Purchaser shall receive a Frame Assembly Structural Fifty (50) Years or 250,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0305. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

FRAME RAIL CORROSION

Purchaser shall receive a Frame Rail Corrosion (Zinc Plate and Powder Coat) Twenty Five (25) Years or 150,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0316. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

FRAME COMPONENTS CORROSION

Purchaser shall receive a Frame Components Corrosion (Zinc Plate) Twenty (20) Years or 132,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0314. The warranty certificate is incorporated by reference into this proposal and included with this proposal or available upon request.

FRONT BUMPER

The chassis shall be equipped with a severe duty front bumper constructed from structural steel channel. The bumper material shall be 0.38 thick ASTM A36 steel which shall measure 12.00 inches high with a 3.05 inch flange and shall be 99.00 inches wide with angled front corners.

The bumper shall be primed and painted as specified.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 21.00 inches ahead of the cab.

FRONT BUMPER PAINT

The front bumper shall be painted the same as the lower cab color. The front bumper trim shall feature a black spray on bedliner coating.

FRONT BUMPER TRIM

A stainless steel trim angle, painted to the customer's specifications, shall be installed on the top corner of the bumper across the front and on the top corner of the bumper tails, terminating at the rearmost portion of the apron. The trim angle shall measure approximately 3.00 inches wide on the horizontal flange and 1.60 inches tall on the vertical flange. The trim shall be affixed to the bumper and bolted down to the apron with isolating washers.

FRONT BUMPER SUCTION PROVISION

The bumper apron shall include a 5.00 inch stainless steel pipe intended for use as a suction intake for the pump. The suction pipe shall be routed from the right hand front bumper area to the area rear of the front axle near the back of the cab.

The front of the suction pipe shall be designed to terminate vertically approximately 3.50 inches below the top surface of the bumper in the right hand outboard position.

The forward end of the suction pipe shall be finished with a 5.00 inch National Pipe Thread (NPT). The rear of the suction shall include a Victaulic groove for connecting to the pump plumbing. The suction pipe shall also include a 0.50 inch NPT port intended as a primer assist connection.

The apparatus manufacturer shall plumb the suction pipe to the pump and shall provide all valves as required.

FRONT BUMPER APRON

The 21.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

FRONT BUMPER DISCHARGE

The chassis shall include frame mounted 2.00 inch diameter plumbed pipe intended for use as a discharge trash line. The discharge pipe shall be routed from the left hand front splay rail area behind the bumper to the area rear of the front axle, ahead of the battery box.

The discharge shall pipe shall be a, 2.00 inch stainless steel schedule 10 tube. The discharge shall include a Victaulic groove for connecting to the pump and discharge hose plumbing on each end of the tube.

The apparatus manufacturer shall plumb the discharge pipe to the pump and shall provide all valves as required.

FRONT BUMPER COMPARTMENT CENTER

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall be the full size of available space in the apron from the cab fascia to the bumper and 38.00 inches wide X 12.00 inches deep. The clear opening shall be 37.75 inches wide. The front edge of the compartment shall include a rolled edge and angled deflector to prevent hose and couplings from catching along the front edge of the compartment. The compartment shall also include a cover constructed of 0.19 inch thick bright embossed aluminum tread plate.

FRONT BUMPER COMPARTMENT RH

The bumper shall include a compartment in the front bumper located on the right hand side outboard of the frame rail. The compartment shall be a tray configured to accommodate a suction swivel. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum.

FRONT BUMPER COMPARTMENT COVER HARDWARE

The front bumper compartment cover(s) shall include gas cylinder stays which shall hold the cover open. Each cover shall be held in the closed position via a D-ring style latch.

MECHANICAL SIREN

The front bumper shall include an electro mechanical Federal Q2B™ siren, which shall be streamlined, chrome-plated and shall produce 123 decibels of sound at 10.00 feet. The Q2B™ siren produces a distinctive warning sound that is recognizable at long distances. A unique clutch design provides a longer coast down sound while reducing the amp draw to 100 amps. The siren shall measure 10.50 inches wide X 10.00 inches high X 14.00 inches deep. The siren shall include mounting hardware designed to recess or flush mount.

MECHANICAL SIREN LOCATION

The siren shall be recess mounted on the driver side of the front fascia of the bumper, in the outboard position.

MECHANICAL SIREN ACCESSORIES

The front of the siren shall include (2) stainless steel flat bars approximately 1.00 inch wide by 19.00 inches long. Each bar shall be placed vertically on the right and left side of the siren face wrapping around towards the back of the siren into the bumper extension offering protection to the Q2B siren.

AIR HORN

The chassis shall include two (2) Grover brand Stutter Tone air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish.

AIR HORN LOCATION

The air horns shall be recess mounted in the front bumper fascia between the frame rails in the right and left outboard positions.

AIR HORN RESERVOIR

One (1) air reservoir, with a 1200 cubic inch capacity, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

ELECTRONIC SIREN SPEAKER

There shall be two (2) Whelen Engineering Inc. model SP123BMC, 100 watt cast aluminum speakers provided. Each speaker shall measure 7.25 inches tall X 9.25 inches wide X 5.25 inches deep. Each speaker shall include a chrome grille.

ELECTRONIC SIREN SPEAKER LOCATION

The two (2) electronic siren speakers shall be located on the front bumper face between the frame rails in the right and left side inboard positions.

FIRE BELL

The chassis shall include a South Park Brass FB12, 12 inch fire bell. The mechanical pull-cord style bell shall be brass chrome plated with stand, clapper, acorn bolt topper. The mechanical fire bell shall be installed in the customer specified location.

FIRE BELL LOCATION

The fire bell shall be pedestal mounted on the right side cab corner on a polished stainless steel bracket.

FRONT BUMPER TOW HOOKS

Two (2) heavy duty tow hooks, painted to match the frame components, shall be installed behind the front bumper in the forward position, bolted directly to the side of each chassis frame rail with grade 8 bolts.

FRONT BUMPER TOW EYES

The bumper shall include two (2) painted tow eyes shall be installed through the front bumper. The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside diameter of the tow eye shall be 2.00 inch and have inside/outside chamfered edges. The tow eyes shall be painted to match the frame components.

CAB TILT SYSTEM

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission. The cab tilt pump assembly shall be located on the right side of the chassis forward of the front axle behind the officer's door area.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90 inch ball and be anchored to frame brackets with 1.25 inch diameter studs.

A steel safety channel assembly, painted safety yellow shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

CAB TILT AUXILIARY PUMP

A manual cab tilt pump module shall be attached to the cab tilt pump mounting bracket.

CAB TILT LIMIT SWITCH

A cab tilt limit switch shall be installed. The switch will effectively limit the travel of the cab when being tilted. The limit adjustment of the switch shall be preset by the chassis manufacturer to prevent damage to the cab or any bumper mounted option mounted in the cab tilt arc. Further adjustment to the limit by the apparatus manufacturer shall be available to accommodate additional equipment.

CAB TILT ALARM

A Preco Matic model 1059 audible alarm shall be installed and shall automatically activate the pulsed warble sounding alarm when the cab tilt is actuated acting as a notification and warning.

CAB TILT CONTROL RECEPTACLE

A 25.00 foot cab tilt control harness shall be provided on the right side of frame just behind the cab. This harness shall consist of an 8.00 foot harness connected to the tilt pump and a 17.00 foot extension harness with a six (6) pin Deutsch connector with cap for mounting in a compartment in the body.

The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.

CAB TILT NOISE DAMPENER

In an effort to reduce the amount of noise created by the cab tilt lock down system, sound dampening spray-on materials shall be utilized to insulate contact points in the system to help prevent metallic sounds from occurring while traversing rough roads.

CAB TILT LOCK DOWN INDICATOR

The cab dash shall include a message located within the dual air pressure gauge which shall alert the driver when the cab is unlocked and ajar. The alert message shall cease to be displayed when the cab is in the fully lowered position and the hold down hooks are secured and locked to the cab mounts.

In addition to the alert message an audible alarm shall sound when the cab is unlocked and ajar with the parking brake released.

CAB WINDSHIELD

The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

The glass utilized for the windshield shall include standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and replacement costs.

Each windshield shall be bonded to the cab using a high strength commercial grade automotive adhesive.

GLASS FRONT DOOR

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished using electric actuation. The left and right front door windows shall be controlled using a switch on each respective side door window ledge. The driver's door shall also include a switch for the officer and each rear crew powered door window which shall be located on top of the door window ledge.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as “cozy glass” ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black ring on the exterior.

GLASS TINT FRONT DOOR

The windows located in the left and right front doors shall have a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS REAR DOOR RH

The rear right hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the door panel ledge and on the driver’s control panel.

GLASS TINT REAR DOOR RIGHT HAND

The window located in the right hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS REAR DOOR LH

The rear left hand side crew door shall include a window which is 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the door panel ledge and on the driver’s control panel.

GLASS TINT REAR DOOR LEFT HAND

The window located in the left hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS SIDE MID RH

The cab shall include a window on the right side behind the front door and ahead of the crew door and above the wheel well which shall measure approximately 15.50 inches wide X 27.00 inches high and rectangular in shape. This window shall be fixed and bonded to the cab using a high strength commercial grade automotive adhesive.

GLASS TINT SIDE MID RIGHT HAND

The window located on the right hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

GLASS SIDE MID LH

The cab shall include a window on the left side behind the front door and ahead of the crew door and above the wheel well which shall measure approximately 15.50 inches wide X 27.00 inches high and rectangular in shape. This window shall be fixed and bonded to the cab using a high strength commercial grade automotive adhesive.

GLASS TINT SIDE MID LEFT HAND

The window located on the left hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

CABIN AIR FILTRATION SYSTEM

An Active Air Purification system will be installed in the cab. The system utilizes RGF's Photohydroionization® Cell (PHI-Cell®) technology which produces hydro-peroxides and hydroxide ions, reducing airborne mold, bacteria, viruses, and odors up to 99%.

The system shall include a stainless-steel housing approximately 7.50 inches high X 16.13 inches wide X 6.6 inches deep in a trapezoid shape and shall be located at the upper portion of the rear wall mounted in a horizontal orientation. The system shall be 12V DC and shall be active either when the ignition power is on, or when the shoreline is connected.

CLIMATE CONTROL

A ceiling mounted combination defroster and cabin heating and air conditioning system shall be located above the engine tunnel area. The system covers and plenums shall be of severe duty design made of aluminum which shall be coated with a customer specified interior paint. The design of the system's covers shall provide quick access to washable air intake filters as well as easy access to other serviceable items.

Six (6) adjustable louvers shall provide comfort for the front seat occupants and ten (10) adjustable louvers shall provide comfort for the rear crew occupants. The plenum shall be shortened to terminate in the mid crew area on cabs with 10.00 inch raised roofs and greater. This shortened plenum shall allow for the customer to utilize the upper rear center wall for compartmentation, equipment, or apparatus operations.

Separate front and rear blower motors shall be of brushless design and shall be controlled independently. It shall be capable of reducing the interior cabin air temperature from 122° F (+/- 3° F) to 80° F in thirty minutes with 50% relative humidity and full solar load as described in SAE J2646.

The system shall also provide heater pull up performance which meets or exceeds the performance requirements of SAE J1612 as well as defrost performance that meets or exceeds the performance requirements of SAE J381.

A gravity drain system shall be provided that is capable of evacuating condensate from the vehicle while on a slope of up to a 13% grade in any direction.

The air conditioning system plumbing shall be a mixture of custom bent zinc coated steel fittings and Aeroquip flexible hose with Aeroquip EZ-Clip fittings.

The overhead heater/defroster plumbing shall include an electronic flow control valve that re-directs hot coolant away from the evaporator, via a bypass loop, as the temperature control is moved toward the cold position.

Any component which needs to be accessed to perform system troubleshooting shall be accessible by one person using basic hand tools. Regularly serviced items shall be replaceable by one person using basic hand tools.

*****The chassis manufacturer recommends that the overall climate system performance be based off third-party testing in accordance with the Society of Automotive Engineering standards as a complete system.***

Individual component level BTU ratings is not an accurate indicator of the performance capability of the completed system. System individual component BTU ratings:

- Air conditioning evaporator total BTU/HR: 82,000
- Air conditioning condenser total BTU/HR: 59,000
- Heater coil total BTU/HR: 98,000

Performance data specified is based on testing performed by an independent third-party test facility using a medium four-door 10" raised roof cab equipped with an ISL engine.

CLIMATE CONTROL DRAIN

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system without additional mechanical assistance.

CLIMATE CONTROL ACTIVATION

The heating, defrosting and air conditioning controls shall be in the center dash driver's switch panel, in a position which is easily accessible to the driver. The climate control shall be activated by a rotary switch.

HVAC OVERHEAD COVER PAINT

The overhead HVAC cover shall be painted with a multi-tone onyx black texture finish.

A/C CONDENSER LOCATION

A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise.

A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted compressor. The compressor shall be compatible with R134-a refrigerant.

*****The chassis manufacturer recommends that the overall climate system performance be based off third-party testing in accordance with the Society of Automotive Engineering standards as a complete system.***

Individual component level ratings are not an accurate indicator of the performance capability of the completed system.

Refrigerant Compressor displacement: 19.1 cubic inches per revolution.

UNDER CAB INSULATION

The underside of the cab tunnel surrounding the engine shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The engine tunnel insulation shall measure approximately 0.30 inch thick including a multi-layer foil faced glass cloth and polyester fiber layer. The foil surface acts as protection against heat, moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by acrylic pressure sensitive adhesive.

INTERIOR TRIM FLOOR

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and a cast aluminum trim piece at each cab door opening. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

INTERIOR TRIM

The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.

REAR WALL INTERIOR TRIM

The rear wall of the cab shall be trimmed with vinyl.

HEADER TRIM

The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.

TRIM CENTER DASH

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge of the electrical access cover for ventilation. The center dash electrical access cover shall include a gas cylinder stay which shall hold the cover open during maintenance.

TRIM LH DASH

The left hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate for a perfect fit around the instrument panel. For increased occupant protection the extreme duty left hand dash utilizes patent pending break away technology to reduce rigidity in the event of a frontal crash. The left hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

TRIM RH DASH

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 4.50 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

TRIM RH DASH ACCESSORIES

The Mobile Data Terminal (MDT) provision on the right hand dash shall be provided with a slide-out tray. The MDT slide-out tray shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate. The mounting surface of the tray measures 12.50 inches wide X 10.75 inches deep which shall allow for the mounting of a MDT with the added luxury of sliding it toward the officer as much as 11.00 inches.

ENGINE TUNNEL TRIM

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25 inch closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The mat shall be held in place by pressure sensitive adhesive. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

ENGINE TUNNEL ACCESSORIES

The engine tunnel shall feature a fabricated aluminum console which shall include a large storage bin with dividers and a map compartment. There shall be two (2) cup holders included in the console. The console shall also have the ability to have a minimum of two radios or remote radio control heads mounted within it.

POWER POINT DASH MOUNT

The cab shall include two (2) 12 volt cigarette lighter type receptacles in the dash to provide a power source for 12 volt electrical equipment. The cab shall also include two (2) Powerwerx combination fast charging (USB) and (USB) type-C power delivery receptacles in the cab dash switch panel to provide a power source for USB chargeable electrical equipment. Each combination USB receptacle shall be capable of a 5 Volt 3.1 amp total output. The receptacles shall be wired battery direct.

AUXILIARY POWER POINT MID CREW

The cab interior shall include two (2) Powerwerx combination fast charging (USB) and (USB) type-C power delivery receptacles to provide a power source for USB chargeable electrical equipment. One (1) receptacle shall be located under the right hand mid side window location and one (1) receptacle shall be located under the left hand mid side window location, each within a composite housing. The receptacles shall be connected directly to the batteries.

AUXILIARY POWER POINT REAR CREW

The cab shall include two (2) Powerwerx combination fast charging (USB) and (USB) type-C power delivery receptacles to provide a power source for USB chargeable electrical equipment. The USB receptacles shall be located on the top of the forward facing seat box in the crew area, one (1) on the left and one (1) on the right of the center forward facing seat(s). The receptacles shall be wired battery direct.

STEP TRIM

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of SAE 304 stainless steel with embossed perforations and diamond shaped cutout. The perforations and cutouts shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The stainless steel material shall have a number 8 mirror finish. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in 0.08 inch thick 3003-H22 embossed aluminum tread plate.

UNDER CAB ACCESS DOOR

The cab shall include an aluminum access door in the left crew step riser painted to match the cab interior paint with a push and turn latch. The under cab access door shall provide access to the diesel exhaust fluid fill.

INTERIOR DOOR TRIM

The interior trim on the doors of the cab shall consist of an aluminum panel constructed of Marine Grade 5052-H32 0.13 of an inch thick aluminum plate. The door panels shall include a painted finish.

DOOR TRIM CUSTOMER NAMEPLATE

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their department, city, township, or county.

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes and a manufacturer logo. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLE "A" PILLAR

There shall be two (2) rubber covered 11.00 inch grab handles installed inside the cab, one on each "A" post at the left and right door openings. The left handle shall be located 7.88 inches above the bottom of the door window opening and the right handle shall be located 2.88 inches above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

INTERIOR GRAB HANDLE FRONT DOOR

Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

INTERIOR GRAB HANDLE REAR DOOR

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00 inch long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.

INTERIOR SOFT TRIM COLOR

The cab interior soft trim surfaces shall be black in color.

INTERIOR TRIM SUNVISOR

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded black vinyl trim.

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be black in color.

CAB PAINT INTERIOR DOOR TRIM

The inner door panel surfaces shall be painted with multi-tone onyx black texture finish.

HEADER TRIM INTERIOR PAINT

The metal surfaces in the header area shall be coated with multi-tone onyx black texture finish.

TRIM CENTER DASH INTERIOR PAINT

The entire center dash shall be coated with multi-tone onyx black texture finish. Any accessory pods attached to the dash shall also be painted this color.

TRIM LH DASH INTERIOR PAINT

The left hand dash shall be painted with a multi-tone onyx black texture finish.

TRIM RIGHT HAND DASH INTERIOR PAINT

The right hand dash shall be painted with multi-tone onyx black texture finish.

RIGHT HAND DASH ACCESSORIES INTERIOR PAINT

The right hand dash accessories shall be painted with multi-tone onyx black texture finish.

ENGINE TUNNEL ACCESSORIES PAINT

The engine tunnel accessories shall be painted with multi-tone onyx black texture finish.

DASH PANEL GROUP

The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be within comfortable reach of both the driver and officer.

SWITCHES CENTER PANEL

The center dash panel shall include twelve (12) rocker switch positions in a six (6) over six (6) switch configuration in the left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SWITCHES LEFT PANEL

The left dash panel shall include five (5) switches in a three (3) over two (2) staggered switch configuration. Two (2) rocker switches, one (1) headlight switch, one (1) windshield wiper/washer control switch and one (1) instrument lamp dimmer switch shall be provided.

A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SWITCHES RIGHT PANEL

The right dash panel shall six (6) rocker switch positions in a three (3) over three (3) switch configuration.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall activate a digital seat position indicator with a seat position legend and integrated audible alarm in the switch panel.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds and the corresponding seat belt remains unfastened. The warning system shall also activate when any seat is occupied and the corresponding seat belt was fastened in an incorrect sequence. Once activated, the visual indicators and applicable audible alarm shall remain active until all occupied seats have the seat belts fastened.

SEAT MATERIAL

The Bostrom Firefighter seats shall include a covering of extra high strength, tear resistant, and waterproof fabric made of durable Durawear Plus™ 1800 denier ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Durawear Plus shall include low seam stitching to eliminate seam wear. Durawear Plus™ meets or exceeds specification of the common trade name Imperial 1800. The material meets FMVSS 302 flammability requirements.

Seats shall be Foam Block™ encapsulated foam with Zip Clean covers. The encapsulated Foam Block™ feature shall resist gas and liquid absorption in the cushion. Seat cushions, head rest and side bolsters shall zip off using a heavy duty skirted zipper to allow for quick removal and easy cleaning. All Zip off covers are designed for machine washing and air drying.

One (1) extra seat cushion and applicable back cover(s) shall be provided per seating position.

If applicable, Theatre style seats located in the cab shall be high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

SEAT COLOR

All seats supplied with the chassis shall be black in color. All seats shall include red seat belts.

SEAT BACK LOGO

The seat back shall include the manufacturer logo. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

SEAT DRIVER

The driver's seat shall be an H.O. Bostrom 500 Series Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft with 8.00 inches of travel, back angle adjustment and seat rake adjustment. The seat shall feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly. The ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK DRIVER

The driver's seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

SEAT MOUNTING DRIVER

The driver's seat shall be installed in an ergonomic position in relation to the cab dash.

OCCUPANT PROTECTION DRIVER

The driver's position shall be equipped with the IMMI 4Front and RollTek™ Systems which shall secure belted occupants and increase the survivable space within the cab. The 4Front and RollTek™ Systems shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, and rollover events.

The Driver's seating area protection shall include:

- Drivers airbag **DAB** - inflates a steering wheel airbag to protect the head and neck of the driver.
- Driver's knee airbag **DKAB** - inflating knee bolster airbags to protect the knees.
- Integrated roll sensor **IRS** - detects an imminent rollover, activates protective devices and records crash events.
- Integrated belt pretension **IBP** - device for mechanical and/or electrical seats tightens the seat belt, securing driver in seat and positions driver for contact with seat integrated head cushion side roll airbag.

Inflatable head cushion seat integrated side roll airbag **SRA** - protects driver's head/neck and shields driver from dangerous surfaces.

ADDITIONAL SEAT COVER DRIVER

One (1) set of additional seat cushion and seat back covers shall be provided for the driver's position. The seat back cover shall either be a single piece for non-SCBA backs or a set of covers for bolsters and head cushions around the SCBA backs, dependent on seat back style.

SEAT OFFICER

The officer's seat shall be a H.O. Bostrom 500 Series Sierra seat model. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK OFFICER

The officer's seat back shall include an IMMI brand SmartDock® Gen 2 hands-free self contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

SEAT MOUNTING OFFICER

The officer's seat shall be installed in an ergonomic position in relation to the cab dash.

OCCUPANT PROTECTION OFFICER

The officer's position shall be equipped with the IMMI 4Front and RollTek™ Systems which shall secure belted occupants and increase the survivable space within the cab. The 4Front and RollTek™ Systems shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, and rollover events.

The Officer's seating area protection shall include:

- Officer's knee airbag **OKAB** - inflating knee bolster airbags to protect the knees.
- Integrated roll sensor **IRS** - detects an imminent rollover, activates protective devices and records crash events.
- Integrated belt pretension **IBP** - device for mechanical and/or electrical seats tightens the seat belt, securing officer in seat and positioning officer for contact with seat integrated head cushion side roll airbag.
- Inflatable head cushion seat integrated side roll airbag **SRA** - protects officer's head/neck and shields officer from dangerous surfaces.

ADDITIONAL SEAT COVER OFFICER

One (1) set of additional seat cushion and seat back covers shall be provided for the officer's position. The seat back cover shall either be a single piece for non-SCBA backs or a set of covers for bolsters and head cushions around the SCBA backs, dependent on seat back style.

POWER SEAT WIRING

The power seat or seats installed in the cab shall be wired directly to battery power.

SEAT BELT ORIENTATION CREW

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

SEAT REAR FACING OUTER LOCATION

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the left side front seat and one (1) located directly behind the right side front seat.

The primary position designation per NFPA 1900 2024 edition, shall only declare the positioning in the cab offers a minimum width of 27.60 inches of shoulder clearance without overlap of any other primary seating position and a minimum of 10.80 inches each side of seat center line. Clear width may be offset from center of seat cushion by up to 3.00 inches. It shall also offer a minimum of 22.00 inches of shoulder width clearance without any overlap of any position.

SEAT CREW REAR FACING OUTER

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom 500 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK REAR FACING OUTER

The crew area seat backs shall include an IMMI brand SmartDock® Gen 2 hands-free self contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

SEAT MOUNTING REAR FACING OUTER

The rear facing outer seats shall offer special mounting positions which shall be 2.00 inches towards the rear wall offering additional space between the front seats and the outer rear facing seats.

OCCUPANT PROTECTION RFO

The rear facing outer seat position(s) shall be equipped with the RollTek™ System which shall secure belted occupants and increase the survivable space within the cab. The RollTek™ System shall deploy integrated systems to protect against injuries in rollover events.

The rear facing outer seat position(s) protection shall include:

- Integrated roll sensor **IRS** - detects an imminent rollover, activates protective devices and records crash events.
- Integrated belt pretension **IBP** - device for flip-up (non-theatre) and fixed mechanical seats tightens the seat belt, securing occupant in seat and positioning occupant for contact with seat integrated head cushion side roll airbag.

Inflatable head cushion seat integrated side roll airbag **SRA** - protects occupant's head/neck and shields occupant from dangerous surfaces.

ADDITIONAL SEAT COVER RFO

One (1) set of additional seat cushion and seat back covers shall be provided for each rear facing outer position. The seat back cover shall either be a single piece for non-SCBA backs or a set of covers for bolsters and head cushions around the SCBA backs, dependent on seat back style in each position.

SEAT FORWARD FACING CENTER LOCATION

The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.

SEAT CREW FORWARD FACING CENTER

The forward facing center seat shall be a H.O. Bostrom 500 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position. The seat and cushion shall be hinged and compact in design for additional room. The seat shall include a "Fold and Hold" feature so that the cushion shall remain in the seated position and simply touched to flip up.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The ABTS feature shall also include the RiteHite™ shoulder adjustment feature to provide enhanced comfort and safety by allowing customized seat belt fit.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in

FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

SEAT BACK FORWARD FACING CENTER

The crew area seat backs shall include an IMMI brand SmartDock® Gen 2 hands-free self contained breathing apparatus (SCBA) holder. The hands-free holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

OCCUPANT PROTECTION FFC

The forward facing center seat positions shall be equipped with the RollTek™ rollover occupant protection system which shall secure occupants, increase the survivable space within the cab and protect against head/neck injuries in the event of a rollover accident.

The system shall function using a microprocessor-controlled, solid-state sensing device which, when the system detects a side roll shall provide instantaneous occupant protection (less than 0.3 seconds from trigger to total deployment) by automatically initiating the following sequence:

1. The seat belt shall tighten around the occupant.

System Components Shall Include:

Integrated Roll Sensor **IRS** - detects an imminent rollover, activates protective devices and records crash events.

Integrated Belt Pretension **IBP** with flip-up (non theatre) and fixed mechanical seats - tightens the seat belt around occupant, securing occupant in seat.

Integrated Gas Pretension **IGP** with flip-up theatre style seats - tightens the seat belt around occupant, securing occupant in seat.

ADDITIONAL SEAT COVER FFC

One (1) set of additional seat cushion and seat back covers shall be provided for each forward-facing center position. The seat back cover shall either be a single piece for non-SCBA backs or a set of covers for bolsters and head cushions around the SCBA backs, dependent on seat back style in each position.

SEAT FRAME FORWARD FACING

The forward facing center seating positions shall include a full width seat frame located and installed at the rear wall. The seat frame shall span the available space on the rear wall. The seat frame shall be 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

SEAT FRAME FORWARD FACING STORAGE ACCESS

There shall be one (1) access point to the storage area centered on the front of the seat frame. This access point shall be covered by a hinged door to allow access for storage in the seat box.

SEAT MOUNTING FORWARD FACING CENTER

The forward facing center seats shall be installed facing the front of the cab.

SEAT FRAME EXTERIOR REAR COMPARTMENT ACCESS

The seat frame shall be open to the exterior rear compartment on both the right hand side and the left hand side. This shall allow interior access to the left and right exterior rear compartments.

CAB FRONT UNDERSEAT STORAGE ACCESS

The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.

SEAT COMPARTMENT DOOR FINISH

All under seat storage compartment access doors shall have a multi-tone onyx black texture finish.

WINDSHIELD WIPER SYSTEM

The cab shall include a triple arm linkage wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers; each shall be affixed to a radial arm. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow "Check Message Center" indicator light on the instrument panel shall illuminate and the message center in the dual air pressure gauge shall display a "Check Washer Fluid Level" message.

CAB DOOR HARDWARE

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of a fiber reinforced plastic composite with a black matt finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

DOOR LOCKS

Each cab entry door shall include a manually operated door lock. Each door lock may be actuated from the inside of the cab by means of a red knob located on the paddle handle of the respective door or by using a TriMark key from the exterior. The door locks are designed to prevent accidental lock out.

DOOR LOCK LH REAR CAB COMPARTMENT

The left hand side rear compartment shall feature a manual door lock.

DOOR LOCK RH REAR CAB COMPARTMENT

The right hand side rear compartment shall feature a manual door lock.

GRAB HANDLES

The cab shall include one (1) 18.00 inch three-piece knurled aluminum anti-slip exterior grab handle behind each cab door. The Hansen Anti-Slip Rails shall be mounted in bright anodized aluminum 4000 Series II stanchions, complete with weep holes to prevent the buildup of moisture.

The grab rails shall include red reflective tape.

LIGHTED GRAB HANDLES

The grab rails shall include a 12 volt, 17.00 inch long red LED light to provide an increased margin of safety for night time cab entry and egress.

REARVIEW MIRRORS

Retrac Aerodynamic West Coast style dual vision mirror heads model 613305 shall be provided and installed on each of the front cab doors.

The mirrors shall be mounted via 1.00 inch diameter tubular stainless steel arms to provide a rigid mounting to reduce mirror vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an integral convex mirrors installed in the mirror head below the flat glass to provide a wider field of vision. The flat and convex mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The flat and convex mirrors shall be heated for defrosting in severe cold weather conditions.

The mirrors shall be constructed of a vacuum formed chrome plated ABS plastic housing that is corrosion resistant and shall include the finest quality non-glare glass.

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a rocker switch on the dash in the switch panel.

AUXILIARY EXTERIOR MIRRORS

The cab exterior shall include one (1) Retraco 10.00 inch diameter polished stainless steel convex look down mirror. The mirror shall be located above the right side front windshield using a Retraco model 612665 stainless steel arm assembly to provide a stable three-point mount to reduce mirror vibration. The mirror shall provide additional visibility to the right front corner of the vehicle. *** Customer should note that adjustment of the mirror with the front scene light chosen could result in reflection into the cab, affecting the driver's vision. ***

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Fender shall consist of an inner liner 16.00 inches wide made of ABS composite and an outer fenderette 5.00 inches wide made of SAE 304 polished stainless steel.

MUD FLAPS FRONT

The front wheel wells shall have mud flaps installed on them.

CAB EXTERIOR FRONT & SIDE EMBLEMS

The cab shall include three (3) manufacturer emblems. There shall be one (1) installed on the front air intake grille and one (1) emblem on each of the cab sides.

CAB EXTERIOR MODEL NAMEPLATE

The cab shall include manufacturer nameplates on the front driver and officer side doors.

IGNITION

A master battery system with a keyless start ignition system shall be provided. There shall be a three-position rocker switch with off, battery, and ignition positions as well as a stainless-steel etched engine start push-button. The engine start button shall include an illuminated LED halo ring. Both switches shall be mounted to the left of the steering wheel on the dash.

The engine start switch shall only operate when the master battery and ignition switch is in the "ignition" position.

BATTERY

The single start electrical system shall include five (5) Harris BCI 31 925 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.

BATTERY TRAY

The batteries shall be installed within two (2) steel battery trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.

The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up.

BATTERY BOX COVER

Each battery box shall include a cover which protects the top of the batteries. The covers shall be constructed of a composite material which is resistant to corrosion.

BATTERY CABLE

The starting system shall include cables which shall be protected by 275 degree F. minimum high temperature flame retardant loom, sealed at the ends with heat shrink and sealant.

BATTERY JUMPER STUD

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step, 8.00 inches apart. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

ALTERNATOR

The charging system shall include a 430 amp Delco Remy 55SI 12 volt alternator. The alternator shall include a self-exciting integral regulator.

STARTER MOTOR

The single start electrical system shall include a Delco brand starter motor.

BATTERY CONDITIONER

A Kussmaul Auto Charge Chief 4012 battery conditioner shall be supplied. The battery conditioner shall provide a circuit protected 40-amp output for the chassis batteries and a 20-amp output circuit for accessory loads. The conditioner shall also include a battery temperature sensor.

BATTERY CONDITIONER LOCATION

The battery conditioner shall be mounted in the cab in the left-hand rear facing outer seating position.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display with a Digital Status Center shall be integrated into the electrical inlet.

BATTERY CONDITIONER DISPLAY LOCATION

The battery conditioner display shall be integrated into the electrical inlet and located via the electrical inlet location 5209 subcategory.

AUXILIARY AIR COMPRESSOR

A Kussmaul Pump 12V air compressor shall be supplied. The air compressor shall be plumbed to the air brake system to maintain air pressure.

AUXILIARY AIR COMPRESSOR LOCATION

The air compressor shall be installed under the dashboard on the right-hand side, forward of the officer's seating position.

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed on the left hand side of cab over the wheel well.

ELECTRICAL INLET

A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.

Amp Draw Reference List:

Kussmaul 40 LPC Charger - 5 Amps
Kussmaul Chief 4012 Charger – 5.7 Amps
Kussmaul 80 LPC Charger - 13 Amps
Kussmaul Chief 6012 Charger - 9 Amps
Blue Sea P12 7532 - 7.5 Amps
Iota DLS-45/IQ4 - 11 Amps
1000W Engine Heater - 8.33 Amps
1500W Engine Heater - 12.5 Amps
120V Air Compressor - 4.2 Amps
120V Dometic HVAC - 15 Amps

ELECTRICAL INLET CONNECTION

The electrical inlet shall be connected to the battery conditioner.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a black cover.

HEADLIGHTS

The cab front shall include four (4) rectangular LED headlamps with separate high and low beams mounted in bright chrome bezels. Each lamp shall include a heating system that de-ices the headlight.

HEADLIGHT LOCATION

The headlights shall be located on the front fascia of the cab directly above the front warning lights.

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model M6 4.00 inch X 6.00 inch amber LED turn signals which shall be installed in a chrome radius mount housing above and outboard of the front warning and head lamps.

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (2) Tecniq S170 LED side marker lights which shall be provided just behind the front cab radius corners. The lights shall be amber with chrome bezels.

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) marker lamps on the front of the vehicle designating identification and clearance. There shall be five (5) face mounted lights integrated into the scene light.

HEADLIGHT AND MARKER LIGHT ACTIVATION

The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights when the ignition switch is in the "On" position and the parking brake is released.

AUXILIARY TURN SIGNALS

The bumper shall include two (2) rectangular Whelen 600 Series Super LED lights which shall include amber lights with a clear lens. The lights shall activate only when the turn signals are activated. The lights shall be recess mounted within the flat surface of the steel channel bumpers angled front LH and RH corners.

CORNERING LIGHTS

The chassis shall include two (2) Whelen model M6 Super LED steady-on cornering lamps with clear lenses, one (1) each side. The lights shall be mounted within a chrome bezel.

CORNERING LIGHTS ACTIVATION

Each cornering light head shall illuminate when the respective side turn signal is activated.

CORNERING LIGHTS LOCATION

Each cornering light head shall be located on the bumper tail, one each side, in the rearward and uppermost available space claim.

INTERIOR OVERHEAD LIGHTS

The cab shall include a LED dome lamp located over each door. The lights shall include push switches on each lamp to activate both the clear and red portions of the light individually.

INTERIOR OVERHEAD LIGHTS ACTIVATION

The clear portion of each lamp shall be activated by opening the respective door.

LIGHTBAR PROVISION

There shall be one (1) light bar installed on the cab roof. The light bar shall be provided and installed by the chassis manufacturer. The light bar installation shall include a lowered mounting that shall place the light bar just above the junction box and wiring to a control switch on the cab dash.

CAB FRONT LIGHTBAR MODEL

The cab shall be provided with one (1) Whelen model F4N72 light bar. The light bar shall be 72.00 inches in length and feature eighteen (18) customizable pods.

See the light bar layout for specific details.

If applicable, clear lights shall be disabled with park brake engaged.

LIGHTBAR SWITCH

The light bar shall be controlled by the front warn switch. There shall be an additional rocker switch to control the clear lights only.

FRONT SCENE LIGHTS

The front of the cab shall include one (1) 69" Whelen Field Series FSB11B 12V LED scene light installed on the brow of the cab. The light shall feature five (5) integrated marker lights.

The housing shall be powder coated black.

FRONT SCENE LIGHT LOCATION

There shall be one (1) scene light mounted center on the front brow of the cab.

FRONT SCENE LIGHTS ACTIVATION

The front scene lighting shall be activated by individual momentary rocker switches for each of the three (3) separate scene lighting circuits. Each circuit shall be activated independently and shall include rocker switches labeled "Front Scene Far", "Front Scene Near", and "Front Scene Near/Far".

SIDE SCENE LIGHTS

The cab shall include two (2) Whelen model Summit S30MB scene lights installed one (1) on each side of the cab.

The housing shall be powder coated black.

SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right sides of the cab shall be mounted on the upper side radius of the cab above the mid crew area with the rear of the light in line with the center of the front axle.

SIDE SCENE ACTIVATION

The scene lights shall be activated by two (2) lighted momentary rocker switches located in the switch panel, one (1) for each light, and by opening the respective side cab doors.

GROUND LIGHTS

Each door shall include a Tecniq model E10 LED ground light mounted to the underside of the cab step below each door. LED color shall be RED.

GROUND LIGHTS

The ground lighting shall be activated when the parking brake is set, by the opening of the door on the respective cab side, and a rocker switch in the dash panel.

UNDER BUMPER LIGHTS

There shall be two (2) Tecniq E10 Red LED ground lights mounted under the bumper. The under bumper ground lighting shall be activated with the ground lights.

LOWER CAB STEP LIGHTS

The middle step located at each door shall include a Tecniq T44 LED light which shall activate with the opening of the respective door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life.

INTERMEDIATE STEP LIGHTS

The intermediate step well area at the front doors shall include a TecNiq D06 LED light within a chrome housing. The front egress step lights shall provide visibility to the step well area for the first step exiting the vehicle. The Egress step lights shall activate with entry step lighting.

CAB SPOTLIGHTS

The cab shall include one (1) Whelen Arges1 Series Super LED black remote controlled LED spotlight. The spotlight shall feature a narrow beam spotlight lens. The spotlight shall be mounted on a bracket above the light bar in the center of the roof. The spotlight shall include a remote control installed overhead of the officer.

ENGINE COMPARTMENT LIGHT

There shall be a LED NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall activate automatically when the cab is tilted.

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a flashing red TecNiq K50 LED light clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound while the light is activated.

The flashing red light shall be located centered left to right for greatest visibility.

The light and alarm shall be interlocked for activation when either a cab door is not firmly closed, or an apparatus compartment door is not closed, and the parking brake is released.

MASTER WARNING SWITCH

A master switch shall be included in the main rocker switch panel. The switch shall be a rocker type, red in color and labeled "Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the "ON" position shall automatically power up when the master switch is activated.

HEADLIGHT FLASHER

An alternating high beam headlight flashing system shall be installed into the high beam headlight circuit which shall allow the high beams to flash alternately from left to right.

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.

HEADLIGHT FLASHER SWITCH

The flashing headlights shall be activated through a rocker switch on the switch panel. The rocker switch shall be clearly labeled for identification.

INBOARD FRONT WARNING LIGHTS

The cab front fascia shall include two (2) Whelen M6 Super LED front warning lights in the left and right inboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel

INBOARD FRONT WARNING LIGHTS COLOR

The warning lights mounted on the cab front fascia in the inboard positions shall be red.

OUTBOARD FRONT WARNING LIGHTS

The cab front fascia shall include two (2) Whelen M6 Super LED front warning lights in the left and right outboard positions. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the front fascia of the cab within a chrome bezel.

OUTBOARD FRONT WARNING LIGHTS COLOR

The warning lights mounted on the cab front fascia in the outboard position shall be red.

FRONT WARNING SWITCH

The front warning lights shall be controlled via rocker switch on the panel. This switch shall be clearly labeled for identification.

INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Whelen M6 series Super LED intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red.

INTERSECTION WARNING LIGHTS LOCATION

The intersection lights shall be mounted on the side of the cab on the front radius.

AUXILIARY INTERSECTION WARNING LIGHTS

The chassis shall include two (2) Whelen 600 series Super LED auxiliary intersection warning lights, one (1) each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

AUXILIARY INTERSECTION WARNING LIGHTS COLOR

The auxiliary intersection warning lights shall be red.

AUXILIARY INTERSECTION WARNING LIGHTS LOCATION

The auxiliary intersection warning lights shall be mounted on the side of the cab on the front radius above the radius mount intersection warning lights.

SIDE WARNING LIGHTS

The cab sides shall include two (2) Whelen M6 Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be mounted to the sides of the cab within a chrome bezel.

SIDE WARNING LIGHTS COLOR

The warning lights located on the side of the cab shall be red.

SIDE WARNING LIGHTS LOCATION

The warning lights on the side of the cab shall be mounted over the front wheel well directly over the center of the front axle.

SIDE AND INTERSECTION WARNING SWITCH

The side warning lights shall be controlled through the master warning switch.

ROTO-RAYS WARNING LIGHT

A Roto-Rays® warning light shall be provided on the cab. The Roto-Rays light shall consist of three (3) round chrome heads, each equipped with an LED light. The LED lights shall be two (2) red and one (1) clear in color. The Roto-Rays light shall be installed on the top center of the cab front fascia using a custom bracket.

When activated, the entire light head assembly shall rotate at 200 RPM.

ROTO-RAYS WARNING LIGHT SWITCH

The Roto-Rays® front warning light(s) shall be separately controlled through a rocker switch on the main panel. This switch shall be clearly labeled for identification. When the parking brake is engaged the light shall stop rotating.

INTERIOR DOOR OPEN WARNING LIGHTS

The interior of each door shall include one (1) red 4.00 inch diameter Tecniq T40 LED warning light located on the door panel. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

SIREN CONTROL HEAD

A Whelen 295HFS2 electronic siren control head with remote amplifier shall be provided and flush mounted in the switch panel with a location specific to the customer's needs. The siren shall feature 200-watt output, hands free mode and shall be in "standby" mode awaiting instruction. The siren shall offer radio broadcast, public address, wail, yelp, or piercer tones and hands free operation which shall allow the operator to turn the siren on and off from the horn ring if a horn/siren selector switch option is also selected.

STEERING WHEEL HORN BUTTON SELECTOR SWITCH

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the air horn from the steering wheel horn button.

AUDIBLE WARNING LH FOOT SWITCH

Two (2) foot actuated switches shall be supplied for installation in the front section of the cab for driver actuation. One (1) switch shall be wired to actuate the air horn(s) and one (1) switch the mechanical siren(s).

AIR HORN FOOT SWITCH LH

The air horn foot switch shall be a Linemaster model 491-S.

AIR HORN FOOT SWITCH LH LOCATION

The air horn foot switch shall be located on the left hand side accessible to the driver between the steering column and the door.

AIR HORN FOOT SWITCH LH POSITION

The air horn foot switch shall be positioned inboard of any other foot switch, if applicable.

MECHANICAL SIREN FOOT SWITCH LH

The mechanical siren foot switch shall be a Linemaster model 491-S.

MECHANICAL SIREN FOOT SWITCH LH LOCATION

The mechanical siren foot switch shall be located on the left hand side accessible to the driver between the steering column and the door.

MECHANICAL SIREN FOOT SWITCH LH POSITION

The mechanical siren foot switch shall be positioned outboard of any other foot switch, if applicable.

AUDIBLE WARNING LH FOOT SWITCH BRACKET

A 30.00 degree angled foot switch bracket, wide enough to accommodate (2) foot switches, shall be installed outboard of the steering column for specified driver accessible foot switch activations.

AUDIBLE WARNING RH FOOT SWITCH

Two (2) foot actuated switches shall be supplied for installation in the front section of the cab for officer actuation. One (1) switch shall be wired to actuate the air horn(s) and one (1) switch the mechanical siren(s).

AIR HORN FOOT SWITCH RH

The air horn foot switch shall be a Linemaster model 491-S.

AIR HORN FOOT SWITCH RH LOCATION

The air horn foot switch shall be temporarily tied up with a coiled wire drop at the firewall inboard for installation by the customer on the right hand side accessible to the officer.

MECHANICAL SIREN FOOT SWITCH RH

The mechanical siren foot switch shall be a Linemaster model 491-S.

MECHANICAL SIREN FOOT SWITCH RH LOCATION

The mechanical siren foot switch shall be temporarily tied up with a coiled wire drop at the firewall inboard for installation by the customer on the right hand side accessible to the officer.

AUDIBLE WARNING RH FOOT SWITCH BRACKET

An individual 30.00 degree angled bracket shall be shipped loose with the chassis for installation of each officer accessible foot switch by the customer.

MECHANICAL SIREN BRAKE/AUXILIARY ACTIVATION

A red momentary siren brake rocker switch shall be provided in the switch panel on the dash.

MECHANICAL SIREN INTERLOCK

The siren activation shall be interlocked with the park brake and shall only be active when master warning switch is on to prevent accidental engagement.

BACK-UP ALARM

A Preco-Matic model 1059 dual function, dual sound backup alarm shall be installed at the rear of the chassis with an auto-adjusting output level of 87 dB to 112 dB. The alarm shall automatically activate when the transmission is placed in reverse.

FIRE BELL ACTIVATION

There shall be a pull cord handle located within easy reach of the right hand front seat position. The pull cord shall route behind the right hand dash through the fascia on the cab radius which shall actuate the fire bell.

INSTRUMENTATION

An Innovative Controls Digital Instrument Cluster (DIC) shall be provided that combines gauges, telltales, warning messages, and advanced diagnostic capabilities into a single 12.8-inch digital display. The display screen shall have an anti-reflective coating and include touch screen and mechanical button user interaction with the display as well as video and audio interfaces.

The DIC shall include a vehicle odometer which displays the total vehicle distance traveled. The DIC shall also include two vehicle trip odometers (TRIP A and TRIP B) which indicate the distance traveled and average fuel economy for each respective trip. The operator may select which odometer is displayed and may reset either trip odometer through the on-screen display. The DIC shall include an engine hour meter which displays the total engine hours of operation.

The gauges shall have high-contrast white scales with orange pointers. The following gauges shall be included on the display:

- Speedometer that indicates vehicle speed. The scale on the speedometer shall read from 0 to 100 MPH. A numerical display of vehicle speed shall also be shown on the gauge.

- Tachometer that indicates engine speed. The scale of the tachometer shall read from 0 to 3000 RPM.
- Primary and secondary air pressure gauges shall indicate the pressure in the primary and secondary air systems. The scale of the air pressure gauges shall read from 0 to 160 pounds per square inch (PSI). The gauge icon and scale shall turn amber when the system pressure drops below 70 PSI. The icon and scale shall turn red when the system pressure drops below 62 PSI. An audible alarm shall also sound when air pressure is low.
- Fuel gauge. The fuel gauge shall read from empty to full as a fraction of full tank capacity. The gauge icon and scale shall turn amber when the fuel level is below 1/8th tank capacity (1/4th tank in pump mode). An audible alarm shall also sound with low fuel level.
- Diesel exhaust fluid (DEF) gauge. The DEF gauge shall read from empty to full as a fraction of full tank capacity. The gauge icon and scale shall turn amber, and an audible alarm shall sound to indicate low DEF level.
- Engine oil pressure gauge. The scale of the engine oil pressure gauge shall read from 0 to 100 PSI. The gauge icon and scale shall turn red, and an audible alarm shall sound to indicate low oil pressure.
- Engine coolant temperature gauge. The scale of the coolant temperature shall read from 100 to 250 degrees Fahrenheit (°F). The gauge icon and scale shall turn red, and an audible alarm shall sound to indicate high coolant temperature.
- Voltmeter indicating chassis system voltage. The scale of the voltmeter shall be from 10 to 18 volts. The gauge icon and scale shall turn red, and an audible alarm shall sound when the system voltage drops below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The gauge icon and scale shall turn red, and an audible alarm shall sound when the system voltage rises above 15.5 volts for more than 5 seconds.
- Transmission temperature gauge. The scale of the transmission temperature shall read from 100 to 300 degrees Fahrenheit (°F). The gauge icon and scale shall turn amber, and an audible alarm shall sound to indicate high transmission temperature.

The DIC shall include thirty-six (36) colored telltales to indicate vehicle operating conditions. The DIC shall provide text-based warning messages to accompany all telltales. The DIC shall contain an audible alarm capable of providing different alert sounds based on the type of warning. The audible alarm shall be capable of being heard from all seating positions in the cab. The operator shall be able to silence active alarms that are permitted to be silenced by applicable regulations. The DIC shall contain the following indicators and produce the following audible alarms when supplied in conjunction with applicable configurations:

RED TELLTALES

- Air Filter Restriction - indicates restriction of the engine air intake filter
- Air Pressure (Primary) – indicates critically low primary system air pressure
- Air Pressure (Secondary) – indicates critically low secondary system air pressure
- Cab Tilt Warning - indicates the cab tilt system locks are not engaged
- Coolant Temperature – indicates high engine coolant temperature
- Low Coolant - indicates critically low engine coolant
- Oil Pressure – indicates critically low engine oil pressure
- Park Brake - indicates parking brake is set
- Seat Belt - indicates a seat belt violation
- Stop Engine - indicates critical engine fault
- Voltage – indicates critically low or high system voltage

AMBER TELLTALES

- Supplemental Restraint System (SRS) – ISO Icon indicates an SRS fault
- Anti-Lock Brake System (ABS) - indicates anti-lock brake system fault
- Check Engine - indicates engine fault
- Check Transmission - indicates transmission fault
- Diesel Exhaust Fluid (DEF) level – indicates low DEF level
- Diesel Particulate Filter (DPF) - indicates restriction of the diesel particulate filter
- Electronic Stability Control (ESC) – indicates active electronic stability control system
- Fuel Level – indicates low fuel
- High Exhaust System Temperature (HEST) – indicates elevated exhaust temperature
- Malfunction Indicator Lamp (MIL) - indicates an engine emissions system fault
- Regen Inhibit - indicates regeneration of the DPF has been inhibited by the operator
- Transmission Temperature – indicates high transmission or transmission retarder temperature
- Transmission Range Inhibit - indicates a transmission operation is prevented and requested shift into gear may not occur
- Wait to Start - indicates active engine air preheat cycle
- Water in Fuel - indicates presence of water in fuel filter
- Windshield Washer Fluid – indicates low washer fluid

GREEN TELLTALES

- Automatic Traction Control (ATC) - indicates low wheel traction for automatic traction control equipped vehicles. Also indicates mud/snow mode is active for ATC system
- Auxiliary Brake - indicates secondary braking device is active
- Cruise Control - indicates cruise control is enabled
- High Idle - indicates engine high idle is active
- OK to Pump - indicates that conditions have been met for pump operations
- Left and Right Turn Signal – indicates active turn signal
- Pump Engaged - indicates the pump transmission is currently in pump gear

BLUE TELLTALES

- High Beam indicator

AUDIBLE ALARMS

- ABS System Fault
- Air Filter Restriction
- APS System Fault
- Cab Tilt Warning
- Check Engine
- Check Transmission
- Do Not Move Apparatus (open door/compartment)
- DPF Restriction
- High Coolant Temperature
- High or Low System Voltage
- High Transmission Temperature

- Idle Shutdown
- Low Air Pressure
- Low Coolant Level
- Low DEF Level
- Low Engine Oil Pressure
- Low Fuel
- Seatbelt Warning
- Stop Engine
- Turn Signal On
- Water in Fuel

The DIC shall allow the user to configure settings through an on-screen menu. The following settings shall be adjustable by the user:

- Distance/Speed Units – English (miles/MPH) or metric (kilometers/KPH)
- Temperature Units – degrees Fahrenheit (°F) or degrees Celsius (°C)
- Pressure Units – pounds per square inch (PSI) or kilopascals (kPA)
- Odometer/Trip odometer—choose which odometer is displayed and reset trip odometers
- Display Brightness – adjust brightness levels for both day and night settings
- Volume – adjust volume of display speaker
- Auxiliary Gauges – configure location of auxiliary gauges

The DIC shall include on-screen control of the diesel particulate filter (DPF). The DIC shall be capable of initiating and halting a manual DPF regeneration cycle. Also, the DIC shall be capable of inhibiting DPF regeneration when not desired by the operator.

The DIC shall be capable of displaying detailed diagnostic information. Diagnostic information screens shall only be accessible when the park brake is set to prevent unsafe operation of the vehicle. The following information shall be available through the on-screen menu:

- On-Board Diagnostics (OBD) faults – display of all active OBD faults, including the system reporting the fault, the suspect parameter number (SPN), and the failure mode identifier (FMI)
- Messages— display a list of all active warning messages and the status of alarms
- Vehicle Info – display of broadcast chassis information, including Vehicle Identification Number (VIN)
- Pump Interlocks – display pump interlocks status, engine speed, and transmission output speed
- Input/Output Diagnostics – display the state of all wired inputs and outputs to the DIC
- Symbol Legend – display a glossary of all symbols and icons used on the DIC
- J1939 Databus Info – display a list of all electronic control units (ECUs) communicating on the vehicle J1939 databus and display a list of all current message data on J1939

BACKLIGHTING COLOR

The digital dash instrumentation gauges shall display in white and the switch panel legends shall be backlit using red LED backlighting.

HOUR METER

An hour meter for the pump hours shall be included within the digital dash display which shall measure the amount of hours the engine has been operated.

RADIO

A Jensen brand heavy-duty radio with weather band, AM/FM stereo receiver and Bluetooth capabilities shall be installed in a customer specified location. Radio shall be the current, commercially available heavy-duty single-DIN automotive model at time of vehicle manufacturing date.

RADIO LOCATION

The radio shall be installed in the left hand overhead position above the driver, offset to the right hand side.

AM/FM ANTENNA

A small antenna shall be located on the left hand side of the cab roof for AM/FM and weather band reception.

RADIO SPEAKERS

There shall be two (2) speakers installed in the front portion of the cab recessed overhead and two (2) speakers installed in the rear portion of the cab overhead. The speakers shall be provided for connection to the sound system.

RADIO CUTOFF

The radio shall cut-out with the activation of the Master warn switch.

CAMERA RIGHT HAND

One (1) Audiovox Voyager heavy duty rearview teardrop shaped chrome plated housing camera shall be mounted on the officer side of the cab below the windshield ahead of the front door at approximately the same level as the cab door handles. The camera display shall activate when the right side turn signal is activated.

CAMERA REAR

One (1) Audiovox Voyager heavy duty box shaped HD camera shall be shipped loose for OEM installation in the body to afford the driver a clear view to the rear of the vehicle.

The camera system shall include a one-way communication device that shall be an integral part of the rear camera for the use of voice commands directly to the driver. The rear camera display shall activate when the vehicle's transmission is placed in reverse.

CAMERA DISPLAY

The camera system shall be wired to a 7.00 inch flip down HD monitor which shall include a color display and day and night brightness modes installed above the driver position.

COMMUNICATION ANTENNA

An antenna base, for use with an NMO type antenna, shall be mounted on the left hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by chassis builder. The antenna base shall be an Antenex model MABVT8 made for either a 0.38 inch or 0.75 inch receiving hole in the antenna and shall include 17 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design. The antenna base shall be chassis builder supplied.

COMMUNICATION ANTENNA CABLE ROUTING

The antenna cable shall be routed from the antenna base mounted on the roof to the area behind and underneath the right hand front seat.

AUXILIARY COMMUNICATION ANTENNA

An antenna base, for use with an NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 17.00 feet of RG58 A/U cable with no connector at the radio end of the cable. The antenna base shall be mounted on the forward portion of the raised roof of the cab on the left hand side of the cab so not to interfere with light bars or other roof mounted equipment installed by chassis builder. The antenna base shall be chassis builder supplied.

AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING

The auxiliary antenna cable shall be routed from the antenna base mounted on the roof to the area behind and underneath the right hand front seat.

ADDITIONAL COMMUNICATION ANTENNA

An antenna base, for use with and NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base shall be mounted on the left hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by chassis builder. The antenna base shall be chassis builder supplied.

ADDITIONAL COMMUNICATION ANTENNA CABLE ROUTING

The additional antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.

ADDITIONAL COMMUNICATION ANTENNA

An antenna base, for use with and NMO type antenna, shall be installed (Location TBD by Vendor). This will be for vehicle repeater and can be mounted to the vehicle chassis if needed. The antenna base shall be an Antenex model MABVT8 and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base shall be mounted and installed by chassis builder. The antenna base shall be chassis builder supplied.

ADDITIONAL COMMUNICATION ANTENNA CABLE ROUTING

The antenna cable shall be routed from the antenna base mounted on the roof to the area behind and underneath the right hand front seat.

FIRE EXTINGUISHER

A 2.50 pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.

DOOR KEYS

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

CHASSIS OPERATION MANUAL

There shall be two (2) digital copies of the chassis operation manual provided with the chassis. The digital data shall include a parts list specific to the chassis model.

ENGINE AND TRANSMISSION OPERATION MANUALS

The following manuals specific to the engine and transmission models ordered will be included with the chassis in the ship loose items:

- (1) Hard copy of the Engine Operation and Maintenance manual with digital copy
- (1) Digital copy of the Transmission Operator's manual
- (1) Digital copy of the Engine Owner's manual

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

The cab and chassis shall include two (2) digital copies of wiring schematics and option wiring diagrams.

PAINT CONFIRMATION

There shall be a paint confirmation letter sent to the body manufacturer with paint spray outs to confirm the cab primary paint color or primary and secondary paint color as specified by the paint options.

DRIVELINE LAYOUT CONFIRMATION

During the design phase of the chassis the Chassis driveline engineer shall submit the driveline layout to an OEM engineer to review the chassis design for any potential problems integrating the OEM body to the chassis. This shall also include review and approval of requested clear areas. The OEM engineer shall provide approval to the driveline engineer prior to driveline bills of materials being released.

CHASSIS MODIFICATIONS

EXHAUST HEAT SHIELD

The chassis horizontal exhaust pipe shall be equipped with a stainless steel heat shield to protect the body compartments.

The exhaust pipe shall discharge engine exhaust to the right side of the apparatus.

MUDFLAP - FULL WIDTH

A full-width black, anti-sail rear mudflap shall be provided and installed behind the rear wheels. The full-width mudflap shall be lettered as specified by the customer.

REAR TOW BAR

A two inch diameter, solid steel bar shall be suspended approximately 28" below the top of the rear chassis frame rail.

The tow bar shall be attached to the frame rail at each side using properly reinforced channel supports.

Tow bars that are attached to both the frame rails and the apparatus body will not be acceptable, due to undue stresses on the body, caused when the chassis frame flexes.

HELMET STORAGE

The helmets will be stored in a compartment as specified by the purchaser at pre-paint inspection.

TIRE CHAIN ADJUSTMENT AND TESTING

The automatic tire chains furnished with the custom chassis shall be adjusted and road tested to assure proper operation.

FUEL FILL

The fuel fill for the custom chassis shall be located in the left side rear fender area, and shall have a painted stainless steel door, labeled: "DIESEL FUEL ONLY".

CAB TILT CONTROL

A cab-tilt pendant control shall be provided and installed on the right side of the apparatus. The pendant shall be located directly behind the upper auxiliary pump access panel.

A cab tilt instruction plate shall be located as close as possible to the control pendant for ease of operation.

CAMERA MOUNTING

The body builder shall mount the chassis-supplied camera on the rear of the body.

CAB STORAGE COMPARTMENT

A rear-facing storage compartment will be provided and mounted in the center of the cab between the rear-facing outboard seats.

Approximate dimensions - 27" High x 36.00" wide x 15.00" deep.

Two (2) adjustable shelves shall be provided.

A removable cargo net shall be provided for retaining stored equipment.

The compartment shall be constructed of aluminum and will be painted to Black the cab interior.

Storage compartment shall be compliant per NFPA standard for automotive fire apparatus.

Compartment to hold Medical equipment to include: Lucas Device, First in bag (Iron Duck brand), Defib, and suction – All devices are to have chargers installed/wired at factory

COMPARTMENT LIGHT

Compartment shall have an LED light installed on the side wall of the compartment. The light shall be controlled by a switch.

Exact size and design will be resolved at the pre-paint inspection.

IPAD MOUNT

A Havis Shield brand mount shall be provided and installed on the right side of the engine tunnel. See photo provided by customer.

C-TYPE CUP HOLDER - MULTIPLE

A cup holder will be provided and installed in the cab in customer-specified location. The cup holder will be bent from a single piece of aluminum to form a "C" shape and will contain four (4) plastic cup holder inserts. Aluminum will be Black finished.

MEDICAL GLOVE HOLDER - TRIPLE

One (1) G3 Fire Rubber Glove Box Holder, Model 4000-GBBH3 shall be installed on the engine dog house.

RADIO MOUNT SWIVEL BRACKET

A Johnny Ray model swivel bracket shall be provided for two-way radios.

The bracket shall be mounted in a customer specified location that will be determined at pre-paint/customization meeting.

RADIO MOUNTING

Two (2) customer-supplied, pre-programmed radios will be installed in the cab with magnetic mounts for the microphones.

One (1) Portable radio charger installed in customer specified location.

PUMP CONTROL

Provisions shall be made for placing the pump drive system in operation, using controls and switches that are identified, and within convenient reach of the operator.

A "PUMP ENGAGED" indicator shall be provided in the driving compartment and on the operator's panel to indicate that the pump shift process has been successfully completed. An "OK TO PUMP" indicator shall be provided in the driving compartment to indicate that the pump is engaged, the chassis transmission is in pump gear, and the parking brake is engaged.

The fire pump-shift system shall be equipped with a means to prevent unintentional movement of the control device from its set position. The system shall include a nameplate, indicating the chassis transmission shift selector position to be used for pumping, and located so that it can be easily read from the driver's position.

The system shall include the applicable NFPA standard interlocks, pump shift, and "OK TO PUMP" indicator lights in the cab and at the pump panel. The fire pump system shall be equipped with an interlock system to ensure that the pump drive system components are properly engaged in the pumping mode of operation, so that the pumping system can be safely operated from the pump operator's position.

If applicable, the secondary braking device shall be automatically disengaged for pumping operations.

PUMP AND PLUMBING

HALE QMAX-XS 2000 GPM SINGLE-STAGE MIDSHIP PUMP

The pump must deliver the percentage of rated capacity at the pressure listed below:

- 100% of rated capacity at 150 PSI net pump pressure
- 100% of rated capacity at 165 PSI net pump pressure
- 70% of rated capacity at 200 PSI net pump pressure
- 50% of rated capacity at 250 PSI net pump pressure

DETAILED SPECIFICATIONS

Pump Assembly

1. The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis and have the capacity of 2000 gallons per minute (U.S. GPM), NFPA-1900 rated performance.
2. The entire pump shall be assembled and tested at the pump manufacturer's factory.
3. The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.
4. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by the latest NFPA 1900 standard. Pump shall be free from objectionable pulsation and vibration.
5. The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2069 bar). All metal moving parts in contact with water shall be of

high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

6. Pump body shall be horizontally split on a single plane in two sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis.
7. The pump body shall extend as one piece across the truck chassis from side to side and incorporate discharge manifolding with a minimum of (12) 4" ports and (7) 3" port.
8. The pump shall have one double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial imbalance. (No exceptions)
9. Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing to be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. (No exceptions.) The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.
10. Packing - The pump shaft shall have only one packing gland located on the inlet side of the pump. It shall be of split design for ease of repacking. The packing gland must be a full-circle threaded design to exert uniform pressure on packing and to prevent "cocking" and uneven packing load when it is tightened. (No exceptions.) It shall be easily adjusted by hand with rod or screwdriver without special tools or wrenches required. The packing rings shall be of a unique, permanently lubricated, long-life graphic composition and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion. (No exceptions.)

(OR)

10. Mechanical Seal - One (1) only required on the suction (inboard) side of the pump. The mechanical seal must be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber cup, and a tungsten carbide seat with Teflon backup seal.
11. Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.
12. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency. (No exceptions.)
13. The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished under for longer shaft life. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

Gearbox – G Gearbox

1. Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. of drive through torque of the engine system. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.
2. The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.
3. All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An

accurately cut spur design shall be provided to eliminate all possible end thrust. (No exceptions.)

4. The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.
5. If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.
6. For automatic transmissions, three green warning lights shall be provided to indicate to the operator(s) when the pump has completed the shift from Road to Pump position. Two green lights to be located in the truck driving compartment and one green light on pump operators panel adjacent to the throttle control. For manual transmissions, one green warning light will be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

HALE ANODE SYSTEM

Two (2) Hale anodes shall be installed in the pump to prevent damage caused by galvanic corrosion within the pump.

One (1) installed in the suction side of the pump and one (1) installed in the discharge side of the pump.

The anodes should be inspected every 12 months and replaced when over 75% of the zinc has been consumed. Performance of the anode life will vary with water quality and PH.

AUTOMATIC FIRE PUMP PRIMING SYSTEM – MULTI-LOCATION

A Trident Model #31.001.21 automatic multi-location air-operated priming system shall be installed. The unit shall be of all brass and stainless steel construction and designed for fire pumps of 1,250 GPM (4,690 LPM) or more. Due to corrosion exposure, no aluminum or vanes shall be used in the primer design. The primer shall be a three-barrel design with $\frac{3}{4}$ " NPT connection to the fire pump.

The primer shall be mounted above the pump impeller so that the priming line will automatically drain back to the pump. The primer shall automatically drain when the panel control actuator is not in operation. The inlet side of the primer shall include a brass 'wye' type strainer with removable stainless steel fine mesh strainer to prevent entry of debris into the primer body.

AUTOMATIC PRIMER CONTROL WITH VACUUM GAUGE PANEL

The 12 volt primer control shall be an automatic type, with a pump panel three-way switch to operate an air solenoid valve. The panel switch shall operate a 12-volt solenoid to direct air pressure from the air brake system to prime the pump. To prevent freezing, no water shall enter the primer valve control.

A vacuum gauge, 2" in diameter, with graduations from zero to 30 feet, shall be installed in the primer control panel. The gauge shall be physically connected to the vacuum side of the primer and read only when the primer is running, so it will never see or be subject to damage from high pump intake pressures.

The automatic priming switch shall have three positions as follows:

- **Prime** - the lower position shall be a momentary “push-to-prime”. The “Prime” position also allows the operator to “ramp” test the primer without the fire pump being engaged.
- **Off** - center position
- **Auto-Prime** - in the upper position, a green LED pilot light shall be illuminated when the switch is the "Auto-Prime" position. The *Auto-Prime* operates automatically when the pump pressure drops below 20 PSIG. The primer shuts off automatically when the pump pressure is re-established and exceeds 20 PSIG. The *auto* mode only operates when the fire pump is engaged.

One (1) additional push-to-prime remote primer control shall be installed on the panel for the specified intake. The additional controls shall operate the air primer to pre-prime and may be used to remove air from the auxiliary intake piping and hose, while the fire pump is operating. To prevent freezing, no water shall enter the primer valve control.

Warranty - The primer shall be covered by a five (5) year parts warranty.

PRESSURE GOVERNOR - CHASSIS SUPPLIED

The pressure governor, furnished with the custom chassis, shall be installed at the pump panel.

PIPING

All piping shall be heavy-duty, 304 grade, schedule 10 stainless steel or Class 1 high-pressure flexible hose. All stainless steel fittings shall be threaded or welded.

Class 1 flexible hose shall be Black SBR synthetic rubber hose with 300# working and 1200# burst pressure, with stainless steel fittings.

Whenever possible, sweep-type elbows shall be utilized, in order to reduce friction loss. Thread-in 45's and 90's will be used elsewhere.

Victaulic or rubber couplings shall be used, where necessary, to allow flexing of plumbing, which will prevent damage or loosening of the piping, which can occur with rigid plumbing.

All threaded joints shall have non-hardening type sealant for easy removal for repairs.

All piping, including intake and discharge lines, shall be hydrostatically tested. A vacuum test shall be applied to the pump, plumbing, and valves, to test for leaks. The system shall be tested and shall show minimum loss of no more than 10 inches of vacuum over a 5 minute period, as required by NFPA 1900, 2024 edition, section 15.13.6.4.

SYNFLEX SUCTION, DISCHARGE, PRESSURE AND CONTROL LINES

Small lines within the pump enclosure shall be constructed from Synflex hose. Uses include, but are not limited to, such lines as priming control, gauge lines, drain lines, air control valves, pump shift, supplemental cooling, foam flush, and air bleeder valves.

FIRE PUMP & PLUMBING SYSTEM PAINTING

The fire pump and plumbing system shall be painted job color, or the lower color when a two paint scheme is specified. No exceptions.

AKRON VALVES

All pump intake and discharge valves shall be *AKRON 8000* heavy-duty swing-out series. The valves shall have an all-brass body with flow-optimizing stainless steel ball, and dual-polymer seats. The valves shall be capable of dual-directional flow, while incorporating a self-locking ball feature, using an automatic friction lock design, and specially designed flow-optimizing stainless steel ball. All stainless steel parts must be 316 grade for increased resistance to corrosion. The valve shall not require the lubrication of seats or any other internal waterway parts and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valves shall carry a ten (10) year manufacturer's warranty. The valve shall be manufactured and assembled in the United States.

INTAKE RELIEF VALVE

An Elkhart Brass intake relief valve shall be installed on the suction side of the pump. The valve shall be the preset type at 125 PSI and is adjustable from 75 to 250 PSI and shall be designed to prevent vibration from altering the setting. The relief outlet shall be directed below the pump with the discharge terminating in a 2-1/2" male NST connection. The discharge shall be away from the pump operator and labeled "Do Not Cap".

U.L. PUMP & VOLTAGE CERTIFICATION TEST

One (1) certification test shall be performed at the manufacturers' on-site testing facility, by Underwriters Laboratories.

The certification shall include at minimum:

- Pumping test - NFPA 13.13.2
- Pumping engine overload test – NFPA 3.13.3
- Pressure control system test - NFPA 13.13.4
- Priming system tests - NFPA 13.13.5
- Vacuum test - NFPA 13.13.6
- Water tank-to-pump flow test - NFPA 13.13.7
- If the pump is driven by the chassis engine: engine speed advancement interlock test – NFPA 13.13.8
- Gauge and flowmeter test – NFPA 13.13.9
- Low voltage - NFPA 10.13
- Line voltage - NFPA 21.13.3

A test plate shall be provided at the pump operator's position that gives the rated discharges and pressures, together with the speed of the engine, as determined by the certification test. The plate shall be completely engraved with all information at the factory and attached to the vehicle prior to delivery. The original U.L. certificate shall be provided upon acceptance and payment of the apparatus in full.

VENTED LUG CAPS AND PLUGS

All intake and discharge plugs and caps shall be vented-lug type, designed to relieve trapped pressure and help reduce possible operator injuries.

STEAMER INLETS

Two (2) 6" steamer inlets shall be provided on the pump panels, one (1) on the left side and one (1) on the right side.

Both inlets shall have screens and chrome caps with long handles.

FRONT SUCTION

Front suction piping shall be provided, that will terminate vertically through the top of front extended bumper.

This line shall have Victaulic type couplings, front and rear, with drains located, where necessary, at the lowest points of the piping.

The suction shall utilize 5" stainless steel piping, (installed by the chassis manufacturer,) and shall extend from the right front bumper to the back of the cab.

The body manufacturer shall continue the plumbing to the right suction side of the pump. The suction shall be controlled by a 6" Hale MIV-E electric-operated butterfly valve. The valve shall be controlled at the pump operator's panel.

The suction shall terminate with a Trident 5" Female NPT x 6" Male NH chrome locking swivel elbow with removable screen and long handled chrome plated cap.

SUCTION - LEFT SIDE

One (1) 2-1/2" suction valve shall be installed on the left side of the unit. The valve body shall be mounted behind the pump panel, with a 2-1/2" NST chrome inlet swivel, chrome plug and chain, and removable inlet strainer.

SUCTION - RIGHT SIDE

One (1) 2-1/2" suction valve shall be installed on the right side of the unit. The valve body shall be mounted behind the pump panel, with a 2-1/2" NST chrome inlet swivel, chrome plug and chain, and removable inlet strainer.

TANK-TO-PUMP

There shall be one (1) 3" gated tank-to-pump line, piped to the tank sump.

Piping from the sump to the valve shall be 4" diameter.

The line shall be plumbed directly into the back of the pump for maximum efficiency.

A full-flow, inline ball valve, with check valve, shall be provided to prevent accidental pressurization of the water tank through the pump connection.

The valve shall be air activated, with control located on the pump panel.

TANK FILL - 2-1/2"

There shall be a 2-1/2" tank refill line installed, with a 2-1/2" inline valve.

Valve shall be controlled at the pump operator's panel and will be clearly marked "TANK REFILL/PUMP COOLER".

BOOSTER REEL

A Hannay aluminum booster reel with aluminum discs shall be installed over the pump compartment, right side.

Reel shall be constructed utilizing an aluminum welded base.

Rewind shall be a 12v electric motor that will chain-drive the reel drum.

The booster reel shall have an automatic brake to prevent the booster hose from unwinding.

Reel shall include 150' of 1" booster hose.

A TFT *Twister* model #DS1040 1" nozzle shall be provided.

A weather proof push button switch shall be located near the reel on the pump panel.

A gear-driven manual rewind shall be included.

Chrome rollers and guides shall be provided on the right side of the pump compartment.

The booster reel discharge control shall be located at the operator's control panel.

AIR BLOW-OUT FOR BOOSTER REEL

The booster reel shall be equipped with an air blow-out. With the water discharge closed and the nozzle open, the air blow out will evacuate the water from the booster hose. The air blow-out shall be operated by a quarter-turn ball valve located on the pump operator's panel.

CROSS LAY HOSEBEDS W/ 2" PLUMBING

Two (2) cross lays shall be installed over pump compartment.

Each section of the cross lay shall be capable of holding 200' of 1.75" double-jacketed hose in a single-stack load.

A 2" mechanical swivel with 1.5" NST hose connector shall be used in each cross lay, to allow deployment of hose in either direction.

Stainless steel rollers with nylon guides shall be mounted on both ends, and below cross lays.

A 1/4" aluminum divider shall separate the cross lays, and poly-plas matting shall be used on the stainless steel cross lay floor.

Each cross lay shall be plumbed with 2" piping and a 2" valve and shall be controlled at the operator's panel.

CROSS LAY HOSEBED W/ 2-1/2" PLUMBING

One (1) cross lay shall be installed over the pump.

The cross lay shall be capable of holding 200' of 2.5" double-jacketed fire hose, in a single stack load.

A 2.5" mechanical swivel hose connector shall be used in the cross lay, to allow deployment of hose in either direction.

Poly-plas matting shall be provided on the stainless steel cross lay floor.

Stainless steel rollers with nylon guides shall be mounted on both ends, and below the cross lay.

The cross lay shall be plumbed with 2.5" piping and a 2.5" valve and shall be controlled at the operator's panel.

CROSS LAY LID

A polished aluminum diamond plate lid shall be provided over the cross lay(s).

The lid shall have full length stainless steel hinge with Velcro straps to hold lid firmly in place.

CROSS LAY VINYL FLAPS

Black vinyl flaps shall be installed on each end of the cross lay to retain the hose load. The flaps shall be secured with 2" wide straps with Velcro fasteners.

Meets NFPA 1900, 2024 edition, section 12.9.6 - Any hose storage area shall be equipped with a positive means to prevent unintentional deployment of the hose from the top, side, front, and rear of the hose storage area while the apparatus is underway in normal operations.

DUNNAGE COMPARTMENT

The remaining area behind the cross lay(s) shall be used for additional storage space. The floor shall include drains

Each side of the dunnage compartment shall be enclosed with 12 gauge satin-finish stainless steel.

FRONT BUMPER DISCHARGE

One (1) discharge shall be piped to the front bumper with 2" piping and 2" valve.

Discharge shall terminate above the left front bumper with a Trident 2" female NPT x 1.5" male NST chrome swivel elbow.

A control handle shall be provided on the pump operator's panel.

SUMP BOX

The left side running board shall have a 12 gauge stainless steel floating sump box, as large as possible.

The sump box shall have matting and drain holes in the floor of the compartment.

It shall be capable of holding TBD.

The hose shall be secured with straps to prevent unintentional deployment of the hose, per NFPA 1900, 2024 edition, section 12.9.6.

SUMP BOX

The right side running board shall have a floating 12 gauge stainless steel floating sump box, as large as possible.

The sump box shall have matting and drain holes in the floor of the compartment.

It shall be capable of holding TBD.

The hose shall be secured with straps to prevent unintentional deployment of the hose, per NFPA 1900, 2024 edition, section 12.9.6.

DISCHARGES - 2.5" LEFT SIDE

Two (2) 2.5" discharges shall be located on the left side pump panel and shall be controlled from the operator's panel.

Each discharge shall terminate with a 2.5" NST 30 degree turn-down with chrome cap and retainer chain.

DISCHARGES - 2.5 RIGHT SIDE

Two (2) 2.5" discharges shall be located on the right side pump panel and shall be controlled from the operator's panel.

Each discharge shall terminate with a 2.5" NST 30 degree turn-down with chrome cap and retainer chain.

DISCHARGE -3" RIGHT SIDE - 4" STORZ

One (1) 3" discharge shall be located on the right side pump panel and shall be controlled from the operator's panel.

The discharge shall terminate with a 3" NST x 4" 30 degree Storz adapter, with blind cap and retainer chain.

DISCHARGE - 2.5" LEFT FRONT HOSEBED

One (1) 2.5" discharge shall be piped to the left front of the hose bed and shall terminate with a 2.5" chrome male NST adapter.

The discharge shall be controlled from the operator's panel.

DISCHARGE - 2.5" RIGHT FRONT HOSEBED

One (1) 2.5" discharge shall be piped to the right front of the hose bed and terminate with a 2.5" NST chrome male adapter.

The discharge shall be controlled from the operator's panel.

DISCHARGE - 3" DECK GUN

One (1) 3" deck gun discharge shall be plumbed to center of the dunnage area over the pump.

Piping will be firmly supported and braced.

The discharge shall be controlled at the operator's panel.

Discharge shall terminate with 4-bolt flange.

ELECTRONIC DECK MASTER - AKRON #3440

One (1) Akron #3440 Electronic Deck Master remote controlled deck monitor with automated elevating capability shall be provided and attached to deck gun piping.

The following accessories shall be included:

- * Remote tether control with 30 foot of cable mounted compartment L1.
- * Flows up to 1250 GPM
- * Automated elevation deployment up to 24 inches for ease of operation over obstructions.
- * Horizontal rotation up to 340 degrees
- * Vertical travel 90 degrees above to 45 degrees below horizontal
- * Automatic drain for freeze protection and coated electronics to resist corrosion
- * Cast-in turning vanes for more efficient flow
- * Manual override for horizontal, vertical, and elevation control.
- * Includes style #1577 SaberMaster 1250 GPM Electric Nozzle.

* Includes warning light to indicate when the monitor is out of the stowed position with a second light tied into the Hazard light in the cab switch panel.

A 3406 Electric riser shall be provided for the Deck Master.

The electric riser shall be of three piece telescoping design to reduce required mounting space to an overall length of 18-1/2". The telescoping waterway shall be 3" diameter and constructed of hard anodized aluminum extrusion with grease fitting and positive stops. The riser will provide 12 inches of extension. The electric riser control system shall communicate to the electric monitor control system, so that it can be integrated into the stow/deploy function of the monitor. The electric riser control system shall use back EMF sensing and current limiting technology to control the drive system.

This deck gun shall be painted with the apparatus accessories.

AKRON SLO-CLOZ

An Akron Slo-Cloz device shall be provided on each 3" discharge valve, to limit the opening of the valve to no faster than 3 seconds, per N.F.P.A. specifications.

The hydraulic device shall be operable from -40 deg. F to 140 deg. F.

The device shall be made of corrosion-resistant materials, and shall not add more than 1-1/2" to the valve height.

PUMP MASTER DRAIN

The pump shall be equipped with a Trident master drain that will have the capacity to drain all lines and main pump at the same time. The master drain will be mounted on the left side panel, and will be readily accessible.

DRAIN VALVES

All side discharges and auxiliary suction drain valves shall be *Innovative Controls* 3/4" ball brass drain valves with chrome-plated lift lever handles and ergonomic grips. Each lift handle grip shall feature built-in color-coding labels and a verbiage tag, also supplied by *Innovative Controls*, identifying each valve. The colors labels shall also include valve open and close verbiage. The drain valves shall located in the lower portion of the pump panels. All other discharges shall have *Class 1* brand 3/4" automatic bleeder drains.

FOAM SYSTEM - AKRON #3125 - INLINE EDUCTOR

One (1) 125 GPM bypass eductor (Akron Style #3125) shall be provided for external foam application use, with foam pails. Metering valve shall be located on the eductor.

Metering valve reading range shall be 0.00% to 6.0%.

Akron eductors are designed to work at 200 psi discharge valve pressure, for maximum effectiveness. At this pressure, the mixture percentage will be the same as shown on the metering dial. Maximum line length of 300' of 1-3/4" line, based on a maximum 10' of elevation.

PUMP PANEL AND ACCESSORIES

INDEPENDENT PUMP MODULE

The pump module shall be a self-supported structure, mounted independently from the body and chassis cab. The pump module shall be fabricated and constructed from the same material as the body. The design shall allow for normal frame deflection, without imposing stress on the pump module structure. The pump module shall consist of a welded, tubular, stainless steel framework, properly braced, to withstand chassis frame flexing. The pump module shall be bolted to the chassis frame rails. NO EXCEPTIONS

SIDE MOUNTED OPERATOR'S PANEL

CONSTRUCTION

The pump house shall be a properly supported structure, mounted between the body and chassis cab, and shall be bolted to the chassis frame rails. The panel shall be supported by 1-1/2" stainless steel tubing.

The pump, and all of the pump-mounted valves, shall be completely enclosed by the pump house design.

Stainless panels shall be brushed, satin-finish, 12-gauge, 304 material to ensure longevity.

The left side of the pump house shall consist of an upper, hinged panel containing all required gauges.

The lower panel shall contain left side specified discharges, inlets, drains, and pump controls.

The upper right side of the pump house shall consist of double, vertically hinged access doors. The doors will be swing-open-style with quick-opening latches.

A separate, lower panel shall contain the specified right side-mounted discharges and inlets, and their respective drains.

The bottom panel shall be fastened to the pump house with stainless steel bolts and shall be completely removable.

INNOVATIVE CONTROLS PUSH/PULL VALVE CONTROL HANDLES

For valve actuation, the apparatus pump panel shall be equipped with *Innovative Controls* side mount valve controls.

The ergonomically designed, push-pull T-handle shall be chrome-plated zinc with recessed labels for color coding and verbiage. The control rod, double laminated locking clips, and rod housing shall be stainless steel, and shall provide a true, positive lock that will eliminate valve drift. Bronze and Teflon-impregnated stainless steel bushings, in both ends of rod housing, shall minimize rod deflection, never need lubrication, and ensure consistent, long-term operation. Where required, locking, quarter-turn, push-pull, T-handle controls will be provided.

The control assembly shall include a decorative, chrome-plated, zinc, panel-mounting bezel and four (4) mounting bolts.

IDENTIFICATION LABELS FOR PUMP PANEL

Innovative Controls verbiage label bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These labels shall be designed and manufactured to withstand the specified apparatus service environment.

The verbiage label bezel assemblies shall include a chrome-plated, panel-mount bezel with durable, easy-to-read, UV-resistant, polycarbonate inserts, featuring the specified verbiage and color coding. The UV-resistant, polycarbonate verbiage and color inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

SIDE MOUNTED OPERATOR'S PANEL

The following items shall be located on the left side pump panel:

- Individual 0-400# compound discharge gauges shall be provided for each 1.5" or larger discharge
- One (1) -30 to 400 psi master pressure gauge
- One (1) -30 to 400 psi master vacuum gauge
- One (1) engine oil pressure gauge with audible & visual alarm
- One (1) engine water temperature gauge with audible & visual alarm
- One (1) engine voltmeter
- One (1) waterproof engine tachometer
- Two (2) UL test connections
- One (1) master pump house lighting switch
- One (1) engine throttle control
- One (1) relief valve control and open indicator light
- One (1) primer control
- All discharge controls
- One (1) tank fill/pump bypass control
- One (1) tank to pump valve control
- One (1) pump ENGAGED indicator light
- One pump certification plate
- One liquid level meter with sensor in the water tank

RUNNING BOARDS

Running boards shall be provided on each side of the pump module, which shall extend from the front of the side compartments, forward to the back of the cab. Running boards shall be covered with 1/8" aluminum diamond plate. The inboard edge shall be formed upward 1-1/2", to provide a kick strip along the bottom of the pump panel. The outer edge shall be bent downward to provide a safety rail.

Running boards are supported by 1.50" structural stainless steel tubing, welded to the pump house framing, and shall be able to support a minimum of 500 pounds. The running board stepping surface will comply with the latest version of NFPA 1900.

PANEL LIGHTING

The side-mount pump panel shall be illuminated by four (4) TecNiq (model E10-W000-1) 6.00" LED lights with clear lens.

Lights shall be mounted across the top of the gauge panel, and shall be protected by a full-width, polished stainless steel shield.

Lights are controlled by a panel-mounted master light switch.

One (1) side pump panel light shall illuminate when the pump is shifted into gear from inside the cab, affording the operator illumination when first approaching the control panel.

PANEL LIGHTING

The right side panel shall be illuminated by three (3) TecNiq (model E10-W000-1) 6.00" LED lights with clear lens.

Lights shall be mounted across the top of the panel, and shall be protected by a full-width, polished stainless steel shield.

Lights are controlled by a panel-mounted master light switch.

4.0" INNOVATIVE CONTROLS MASTER GAUGES

The master intake and master discharge gauges shall be 4" diameter Innovative Controls pressure gauges. Each gauge shall have a one-piece nylon case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear, scratch-resistant, molded crystals with captive O-ring seals shall be used to ensure distortion-free viewing, and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation, and ensure proper operation from -40°F to +160°F. Each gauge shall meet ANSI B40.1 Grade 1A requirements with an accuracy of +/- 1%, full scale, and include a size-appropriate, phosphorous-bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative, chrome-plated mounting bezels that incorporate valve-identifying verbiage.

The master gauges shall be installed on the pump panel, no more than 6 inches apart. The gauge on the left shall be the master pump intake gauge and shall display a range from -30 to 400 psi, with black graphics on a white background. The gauge on the right shall be the master pump discharge gauge and shall display a range from -30 to 400 psi, with black graphics on a white background.

2-1/2" INNOVATIVE CONTROLS GAUGES

The valve discharge gauges shall be 2 ½" diameter Innovative Controls pressure gauges. Each gauge shall have a one-piece nylon case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear, scratch-resistant, molded crystals with captive O-ring seals shall be used to ensure distortion free viewing and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from -40°F to +160°F.

Each gauge shall exceed ANSI B40.1 Grade B requirements, with an accuracy of +/- 1.5% , full scale, and shall include a size-appropriate, phosphorous-bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy. A polished stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative, chrome-plated, mounting bezels that incorporate valve-identifying verbiage and color labels. The gauges shall display a range from 0 to 400 psi, with black graphics on a white background.

ICI WATER LEVEL MONITOR

An Innovative Controls SL-10 Series tank level monitor system shall be installed. The system shall include an electronic display module, a pressure transducer-based sender unit, and a 10' connection cable. The display module shall show the volume of water in the tank using 10 superbright, easy-to-see LEDs. Tank level indication is enhanced by the use of green LEDs at the full and near-full levels, amber LEDs between ¾ and ¼ tank levels, and red LEDs at the near-empty and empty levels. A wide-angle diffusion lens in front of the LEDs creates a 180° viewing angle. The electronic display module shall be waterproof and shock resistant, being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome-plated, panel-mount bezel with a durable easy-to-read polycarbonate insert, featuring blue graphics and a water icon.

All programming functions shall be accessed and performed from the front of the display module. The programming includes self-diagnostics, manual or self-calibration, and networking capabilities to connect remote slave displays. Low tank level warnings shall include flashing red LEDs, starting below the ¼ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm.

The display module shall receive an input signal from a pressure transducer. This stainless steel sender unit shall be installed on the outside of the water tank near the bottom. All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Location of water tank level monitor shall be on the pump operator's panel.

ICI REMOTE SLAVE TANK LEVEL MONITOR

An Innovative Controls SL Series tank level monitor remote slave display shall be installed. The system shall include an electronic display module and a 10' connection cable. The display module shall show the volume of water in the tank using 10 superbright, easy-to-see LEDs. Tank level indication is enhanced by the use of green LEDs at the full level and near-full levels, amber LEDs between the ¾ and ¼ tank levels, and red LEDs at the near-empty and empty levels. A wide-angle diffusion lens in front of the LEDs creates a 180° viewing angle. The electronic display module shall be waterproof and shock resistant, being encapsulated in a urethane-based potting

compound. The potted display module shall be mounted to a chrome-plated, panel-mount bezel with a durable, easy-to-read polycarbonate insert featuring blue graphics and a water icon.

The remote slave display shall receive input data from an Innovative Controls SL Series master display unit and mirror its function. Low tank level warnings shall include flashing red LEDs starting below the $\frac{1}{4}$ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm.

All wiring, cables, and connectors shall be waterproof without the need for sealing grease.

Location of remote water tank level monitor shall be on the rear of the unit.

ICI REMOTE SLAVE TANK LEVEL MONITOR

An Innovative Controls SL Series tank level monitor remote slave display shall be installed. The system shall include an electronic display module and a 10' connection cable. The display module shall show the volume of water in the tank, using 10 superbright, easy-to-see LEDs. Tank level indication is enhanced by the use of green LEDs at the full level and near-full levels, amber LEDs between the $\frac{3}{4}$ and $\frac{1}{4}$ tank levels, and red LEDs at the near-empty and empty levels. A wide-angle diffusion lens in front of the LEDs creates a 180° viewing angle. The electronic display module shall be waterproof and shock resistant, being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome-plated, panel-mount bezel with a durable, easy-to-read polycarbonate insert featuring blue graphics and a water icon.

The remote slave display shall receive input data from an Innovative Controls SL Series master display unit and mirror its function. Low tank level warnings shall include flashing red LEDs starting below the $\frac{1}{4}$ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm.

All wiring, cables, and connectors shall be waterproof without the need for sealing grease.

Location of remote water tank level monitor shall be on the right side pump panel.

ICI 5-LED REMOTE CAB-MOUNTED SLAVE WATER TANK LEVEL MONITOR

An Innovative Controls SL Series tank level monitor remote, cab-mounted mini slave display shall be installed. The system shall include an electronic display module and a 10' connection cable. The display module shall show the volume of water in the tank, using 5 easy-to-see LEDs that automatically dim and brighten as the ambient light in the cab changes. Tank level indication is enhanced by the use of a green LED at the full level, amber LEDs at the $\frac{3}{4}$, $\frac{1}{2}$ and $\frac{1}{4}$ tank levels, and a red LED at the empty level. The electronic display module shall be waterproof and shock resistant, being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome-plated, panel-mount bezel with a durable, easy-to-read polycarbonate insert featuring blue graphics and a water icon.

The remote slave display shall receive input data from an Innovative Controls SL Series master display unit and mirror its function. Low tank level warnings shall include flashing a red LED starting below the $\frac{1}{4}$ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm.

All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Location of remote water tank level monitor shall be in the cab dash or center console.

WATER TANK

The poly water tank shall be constructed of polypropylene material. This material shall be a non-corrosive, stress-relieved thermoplastic and shall be UV-stabilized for maximum protection. The tank shell thickness may vary depending on the application and may range from ½" to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank capacity shall be 1000 gallons and will be equipped with a 6" vent/overflow.

TANK CONSTRUCTION

The poly water tank shall be of a specific configuration and is designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas, as required and tested, for maximum strength and integrity. Sealant shall be installed between the plastic components prior to being fusion-welded. This sealing method will provide a liquid barrier, offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with a removable lifting assembly, designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1900. The walls shall be welded to the floor of the tank, providing maximum strength. Tolerances in design allow for a maximum variation of 1/8" on all dimensions.

CAPACITY CERTIFICATION

All water tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. Each poly tank is delivered with a certificate of capacity, delineating the empty and full weight, and the resultant capacity based on weight.

TANK LID

The tank cover shall be constructed of 1/2" thick polypropylene and shall be UV-stabilized to incorporate a multi-piece locking design which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold-downs consisting of 2" minimum polypropylene dowels, spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.

TANK FILL TOWER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" polypropylene and shall be a minimum dimension of 12" x 12" outer perimeter. A blue color-coded sticker shall be affixed to the tank lid, indicating that it is a water-only fill tower. The

tower shall be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the purchaser. The tower shall have a 1/4" thick removable polypropylene screen and a polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe.

OVERFLOW AND VENT PIPE

The fill tower shall be fitted with an integral 6" ID schedule 40 P.V.C. combination overflow/vent pipe that is designed to run through the tank and shall be piped to discharge water behind the rear wheels, as required in NFPA 1900, so as to not interfere with rear tire traction.

TANK SUMP

There shall be one (1) sump, standard, per tank. The sump shall be constructed of a minimum of 1/2" polypropylene and be located in the left/front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug, per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3" above the inside floor.

TANK OUTLETS

There will be two (2) standard tank outlets:

- One (1) for the tank-to-pump suction line, which shall be a minimum of 4" coupling and
- One (1) for a tank fill line, which shall be a minimum of a 2" N.P.T. coupling.

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

WATER TANK MOUNTING

The tank shall rest on the body cross members, spaced a maximum of 22" apart, and shall be isolated from the cross members through the use of 1/4" to 1/2" rubber, 2-1/2" wide. The tank shall sit, cradle-mounted, using four (4) stainless steel corner angles 3" x 3" x 1/4" thick. Angles are welded directly to the body cross members. The angles shall keep the tank from shifting left to right or front to rear. The angles are also isolated from the tank through the use of 1/4" to 1/2" rubber. The tank is designed on the free-floating suspension principle and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The body or hose bed cross braces shall act as water tank retainers.

HI/LO TANK FOR LOWERED HOSEBED

The water tank shall be a Hi/Lo design with a full-height forward section and a lowered rear section to allow for the lowest hose bed possible.

The top of the upper/forward section of the tank will contain the tank fill tower(s), and will be finished as a dunnage area for mounting or storage of additional components and equipment. The floor of this dunnage area will be covered with slip-resistant fiberglass grating - the same material as the hose bed. This will allow for proper drainage and ventilation.

BODY, COMPARTMENTS, AND TRIM

STAINLESS STEEL BODY & COMPARTMENT CONSTRUCTION

The complete apparatus body and subframe shall be fabricated of 12 gauge, type-304-grade stainless steel sheeting with a tensile strength of 87,000 psi and a yield strength of 39,000 psi.

All body and compartment components shall be break-form design. Compartments are constructed of 12 gauge type 304 stainless steel. This shall include compartment floors, side walls, and ceilings. No Exception. Compartments shall be formed from a single sheet of metal when possible. The exterior of the compartments shall be solid seam welded. The corner seams shall be caulked with gray silicone caulking. All burrs shall be removed to eliminate sharp edges. BOLTED BODIES WILL NOT BE ACCEPTED.

Interiors of compartments are to be left natural stainless steel with a swirl finish applied to give a lasting and pleasing appearance.

NO EXCEPTIONS TO THIS SECTION

COMPARTMENT SUPPORTS

Compartment floor support shall be provided, fabricated of 12 gauge stainless steel. Support members measuring 2.00" x 4.00" shall be installed under the compartment floors. The supports shall be formed, U-shaped sections that will extend the full width beneath the compartment floors. The upper body walkway floor will be supported in a similar fashion.

STAINLESS STEEL SUBFRAME

A 1.50" x 3.00" stainless steel tubular subframe shall be fabricated to support the body and tank. Structural stainless steel rails shall run the full length of the body, across the top of the chassis frame rails. Stainless steel cross members measuring 3.00" shall be utilized to ensure rigidity, with cross members being spaced no more than 24" apart.

The subframe and cross members shall be MIG-welded. All compartments and all stainless steel sheeting shall be TIG-welded with 308 stainless steel filler wire.

The complete body structure shall be secured to the chassis frame rails with high-grade, 5/8" diameter U-bolts.

Heavy duty rubber sill measuring 1.00" x 3.00" will be installed between the body subframe and chassis frame rails to prevent stress on the body and tank components. The rubber sill shall be retained by a full length stainless steel channel.

NO EXCEPTIONS TO THIS SECTION

STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body shall meet NFPA 1900 anti-slip standards.

WHEEL WELLS

Twelve gauge stainless steel wheel wells shall be an integral part of the body construction.

Wheel wells and cabinetry are to be designed so road debris will not be trapped on top of the cabinets.

Full, one-piece, circular, 24"-deep stainless steel wheel well liners shall be installed. The fender flares shall be bright polished stainless steel and shall be attached to the wheel well using stainless steel bolts.

WIRING ACCESS PANELS

Wiring access panels shall be provided in the body interior corner compartments. The panels shall be bolted in place to allow easy removal for service.

FUEL TANK ACCESS

If the apparatus is equipped with a rear, frame-mounted fuel tank, a removable, bolt-on access panel will be provided in the rear compartment wall.

REMOVAL OF BODY

The completed body with all related parts will be removable in its entirety and shall accompany the water tank when removed.

FASTENERS

All fasteners used in securing components to the body shall be type 304 stainless steel.

COMPARTMENT VENTS

Compartments shall have a minimum of two (2) 4" louvered stainless steel vents per compartment. They shall be installed in the rear wall of each compartment in a fashion to prevent foreign matter and water from entering.

COMPARTMENT DRAINS

Duckbill-type rubber floor drains will be installed in the corners of the lower compartment floors.

PUMPER BODY - HINGED DOORS

LEFT SIDE COMPARTMENTS WITH RESCUE-STYLE HIGH SIDE

L1: 63.00" High x 13.00/28.00" Deep x 40.00" Wide
Door Opening: 59.50" High x 34.50" Wide

L2: 30.00" High x 13.00" Deep x 64.00" Wide
Door Opening: 26.50" High x 59.00" Wide

L3: 63.00" High x 13.00/28.00" Deep x 48.00" Wide

Door Opening: 59.50" High x 42.50" Wide

REAR COMPARTMENT

RR: 55.00" High x 26.00" Deep x 44.00" Wide
Door Opening: 45.25" High x 41.50" Wide

This compartment shall have a Roll up Door

RIGHT SIDE COMPARTMENTS WITH RESCUE-STYLE HIGH SIDE

R1: 63.00" High x 13.00/28.00" Deep x 40.00" Wide
Door Opening: 59.50" High x 34.50" Wide

R2: 30.00" High x 13.00" Deep x 64.00" Wide
Door Opening: 25.60" High x 59.00" Wide

R3: 63.00" High x 13.00/28.00" Deep x 48.00" Wide
Door Opening: 59.50" High x 42.50" Wide

SQUARE BACK BODY DESIGN

The rear side body compartments and the body side walls shall extend all the way to the rear of the apparatus and shall be a squared-off design.

LEFT UPPER COMPARTMENTS

Two (2) compartments shall be provided, above the left side body compartments and outboard of the hose bed, with a flat side. The compartments shall be constructed of 12 gauge stainless steel, same material as the lower body. No Exceptions. Compartment floor shall have two (2) drains, one (1) at the front of the forward compartment, and one (1) at the back of the rear compartment, that will terminate below the body.

Each compartment shall be half the length of the body.

Dimensions: 76.00" Long x 25.00" Deep x 13.00" Long
Door Openings: 9.00" Wide x 69.00" Long

UPPER COMPARTMENT DOORS

Each compartment shall have one (1) aluminum diamond plate door that will hinge to the outside of the body.

The doors will have stainless steel butterfly latches and power lift cylinders. The compartments shall include a one (1) inch-high lip around the compartment openings for the doors to seal against, and to prevent water from entering.

UPPER COMPARTMENT LIGHTS

One (1) SoundOff Signal LED compartment light shall be provided in each compartment. The lighting shall be sized and mounted as appropriate for the compartment layout.

Compartment lighting shall be automatic by the opening and closing of the door.

RIGHT UPPER COMPARTMENTS

Two (2) compartments shall be provided, above the right side body compartments and outboard of the hose bed, with a flat side. The compartments shall be constructed of 12 gauge stainless steel, same material as the lower body. No Exceptions. Compartment floor shall have two (2) drains, one (1) at the front of the forward compartment, and one (1) at the back of the rear compartment, that will terminate below the body.

Dimensions: 76.00" Long x 25.00" Deep x 13.00" Long

Door Openings: 9.00" Wide x 69.00" Long

Each compartment shall be half the length of the body.

UPPER COMPARTMENT DOORS

Each compartment shall have one (1) aluminum diamond plate door that will hinge to the outside of the body.

The doors will have stainless steel butterfly latches and power lift cylinders. The compartments shall include a one (1) inch-high lip around the compartment openings for the doors to seal against, and to prevent water from entering.

UPPER COMPARTMENT LIGHTS

One (1) SoundOff Signal LED compartment light shall be provided in each compartment. The lighting shall be sized and mounted as appropriate for the compartment layout.

Compartment lighting shall be automatic by the opening and closing of the door.

REAR BUMPER

The rear bumper shall be fabricated of 1.50" x 1.50" and 1.50" x 3.00" structural stainless steel tubing. The bumper shall be fully welded design and shall be welded to the rear side body compartments.

The rear bumper shall be 12.00" deep and shall run the full width of the vehicle.

BUMPER STEP SURFACE

The bumper step shall be covered with aluminum diamond plate, with welded end caps. The bumper stepping surface will comply with the latest version of NFPA 1900.

TOP SIDE BODY TRIM

The top of all side body compartments shall be covered with aluminum diamond plate.

Top overlay edges shall be angled downward and shall extended over the outer body panel approximately 1.00".

REAR BODY TRIM

Any areas on the rear not covered with reflective chevron stripping shall be covered with aluminum diamond plate.

FRONT COMPARTMENT TRIM

Front exterior wall of the front compartments shall be covered with aluminum diamond plate.

SIDE BODY POST TRIM

Side body support posts shall be covered with aluminum diamond plate.

REAR EXTERIOR WHEEL WELL PANEL TRIM

Both exterior rear wheel well panels will be overlaid with #8 mirror finish stainless steel tread plate.

PUMP HOUSE TRIM

The front of the pump house shall be covered with aluminum diamond plate.

STAINLESS STEEL RUB RAILS

Rub rails shall be provided and installed below each side compartment. The rub rail assembly shall be constructed of 1.00" wide x 1.50" high, heavy-duty, 14-gauge, 304-grade stainless steel tubing with black end caps and will be DA finished. Rub rails shall be bolted to the lower exterior edge of the apparatus body, with 0.50" nylon spacers installed between the body and the rub rail.

HOSE BED

A stainless steel hose bed with swirl finish shall be located above the water tank. The hose bed front and side walls shall be free of all sharp edges, to prevent hose damage. There shall be two (2) removable floor sections, constructed of fiberglass grating. This will allow for proper ventilation and drainage of hose.

HOSE BED DIVIDERS

Two (2) full-length, adjustable hose bed dividers shall be located in the hose bed, and shall be fully-adjustable by means of stainless steel uni-strut tracking. Tracking will be located at the front and rear of the hose bed.

Each divider shall be one piece, and shall be constructed of 1/4" extruded aluminum. The divider's bottom T-bar shall extend the full length of the hose bed. A smooth 1/2" diameter top edge is provided to prevent damage to hose.

The dividers shall be bolted in place with stainless steel fasteners, and shall be easily adjusted from side to side with simple hand tools.

HOSE BED CAPACITY

The hose bed shall be capable of holding the following hose (listed left-to-right):

250 Feet of 2.50" DJ hose
1500 Feet of 5.00" LDH hose
300 Feet of 3.00" DJ hose

HOSE BED TARP

A black vinyl hose bed cover shall be provided. The front edge of the cover shall attach with Velcro and twist-lock fasteners. The sides shall attach with shock-cord fasteners on the tarp and stainless steel hooks on the body sides. The rear edge will consist of a weighted flap with straps.

HAND RAILS

Access hand rails shall be constructed of 1-1/4" in diameter extruded aluminum tubing with ribbed rubber inserts. Access rail escutcheons and brackets shall be chrome-plated and shall be attached with stainless steel bolts. Anchoring of posts and framing members for handrails of all types shall be capable of withstanding a load of at least 225 pounds, applied in any direction, at any point along the rail.

Hand rails and handholds shall be constructed so that three points of contact (two hands and one foot, or one hand and two feet) can be maintained at all times while ascending and descending.

VERTICAL HAND RAILS

Two (2) 48" long hand rails shall be mounted vertically, at the rear of the apparatus, one (1) on each side of the rear compartment.

HORIZONTAL HAND RAILS

One (1) 72" long hand rail shall be mounted horizontally just below the hose bed.

FOLDING ACCESS STEPS

Four (4) Innovative Controls folding steps shall be provided and installed. Each step shall be designed to exceed the strength, load, and traction requirements of NFPA. Each step shall be chrome plated and shall include a molded gasket to help prevent water ingress and keep the step mount from damaging painted surfaces. The step shall include a drain at the bottom to allow any water to escape the assembly.

The folding step shall be spring-loaded to hold the step in the upright, stowed position while in transit, and when not in use.

The step shall include a white LED step light.

Location: Rear of unit to allow easy access to the hose bed.

ADDITIONAL FOLDING ACCESS STEPS

Four (4) additional *Innovative Controls* folding steps shall be provided and installed. Each step shall be designed to exceed the strength, load, and traction requirements of NFPA. Each step

shall be chrome plated and shall include a molded gasket to help prevent water ingress and keep the step mount from damaging painted surfaces. The step shall include a drain at the bottom to allow any water to escape the assembly.

The folding step shall be spring-loaded to hold the step in the upright, stowed position while in transit, and when not in use.

The step shall include a white LED step light.

Location to be determined at pre-paint inspection.

SUCTION HOSE COMPARTMENT

A compartment will be located on the left side of the apparatus under the water tank. The compartment will be constructed of stainless steel material and will be integral to the apparatus body. The compartment will be designed to hold two (2) 6" x 10' suction hoses, One (1) 6" x 8' suction hose, and A hinged access door will be provided on the rear face of the apparatus.

LADDER COMPARTMENT

A compartment will be located on the right side of the apparatus under the water tank. The compartments will be constructed of stainless steel material and will be integral to the apparatus body. The compartment will be designed to hold a a 24' extension ladder, 14' roof ladder, 10' attic ladder and two (2) pike poles. . All equipment shall be separated by dividers or tubes. A hinged access door will be provided on the rear face of the apparatus.

LADDER COMPARTMENT DOOR

Compartment will have a single, vertically hinged, aluminum diamond plate door with a stainless steel D-ring latching handle. Door(s) shall be wired to the door ajar circuit.

SCBA CYLINDER/ EXTINGUISHER STORAGE - DOUBLE COMPARTMENT

One (1) spare SCBA cylinder compartment shall be provided in the left/forward position of the rear wheel well area. The compartment will be capable of holding One (1) spare SCBA cylinder and One (1) ABC Extinguisher. The compartment shall be fabricated of stainless steel and shall be lined to prevent vibration. The compartment shall have a drain hole in the floor.

SCBA CYLINDER STORAGE - DOUBLE COMPARTMENT WITH FUEL FILL

One (1) spare SCBA cylinder compartment shall be provided in the left/aft position of the rear wheel well area. The compartment will be capable of holding two (2) spare SCBA cylinders and the chassis fuel fill. The compartment shall be fabricated of stainless steel and shall be lined to prevent vibration. The compartment shall have a drain hole in the floor.

SCBA CYLINDER/ EXTINGUISHER STORAGE - DOUBLE COMPARTMENT

One (1) spare SCBA cylinder compartment shall be provided in the right/forward position of the rear wheel well area. The compartment will be capable of holding One (1) spare SCBA cylinder and One (1) APW Extinguisher. The compartment shall be fabricated of stainless steel and shall be lined to prevent vibration. The compartment shall have a drain hole in the floor.

SCBA CYLINDER STORAGE - DOUBLE COMPARTMENT

One (1) spare SCBA cylinder compartment shall be provided in the right/aft position of the rear wheel well area. The compartment will be capable of holding two (2) spare SCBA cylinders. The compartment shall be fabricated of stainless steel and shall be lined to prevent vibration. The compartment shall have a drain hole in the floor.

COMPARTMENT DOORS

The wheel well compartments will have vertically-hinged #8 mirror finish stainless steel diamond plate doors with Southco #E3-17-22 all stainless steel door latches. The left front door shall be labeled: "SPARE SCBA CYLINDER/ ABC EXTINGUISHER". Doors shall be wired to the door ajar circuit.

COMPARTMENT DOORS

The wheel well compartments will have vertically-hinged #8 mirror finish stainless steel diamond plate doors with Southco #E3-17-22 all stainless steel door latches. The right front door shall be labeled: "SPARE SCBA CYLINDER/ APW EXTINGUISHER". Doors shall be wired to the door ajar circuit.

COMPARTMENT DOORS

The wheel well compartments will have vertically-hinged #8 mirror finish stainless steel diamond plate doors with Southco #E3-17-22 all stainless steel door latches. The doors shall be labeled: "SPARE SCBA CYLINDER". Doors shall be wired to the door ajar circuit.

SHELVING - ADJUSTABLE

A total of seven (7) adjustable shelves shall be provided and installed in customer specified location.

Shelf construction, where specified, shall be rigid 3/16" aluminum with 2" lip on the front and rear..

The shelving shall be adjustable by means of a threaded tightener that slides in a track to allow precise height adjustment. All tracking will be stainless steel uni-strut.

COMPARTMENT DIVIDERS

A total of one (1) compartment divider will be mounted in a customer specified location.

Divider will be fabricated of 12 gauge stainless steel and will be welded into the compartment.

POLY BOARD MOUNTING BOARD

1/2" textured black poly board will be installed on the back wall of the specified compartment to allow for equipment mounting. The board will be spaced 1/2" from the back wall of the compartment.

Quantity: 7

Location: All lower body compartments

TRAYS - PULL OUT

Three (3) Accuride slide out trays shall be provided and installed on the floors of customer-specified compartments.

Sliding tray where specified shall be mounted in a manner that provides for maximum clearance overhead.

The tray shall have a capacity of 300 pounds in the fully extended position.

The side mounted slides are to be equipped with ball bearings for ease of operation.

Tray will lock automatically in the open and closed positions. Manual type locks will not be acceptable.

LOCATION:

RESCUE TOOL TRAY - PULL OUT

One (1) Accuride slide-out tray shall be provided and installed in a customer-specified location. This tray will be designed to hold customer's rescue tools.

Custom-designed brackets shall be provided for holding jaws, cutters, rams, etc.

The sliding tray, where specified, shall be mounted in a manner that provides maximum overhead clearance. The tray shall have a capacity of 300 pounds in the fully extended position.

The side-mounted slides will be equipped with ball bearings for ease of operation.

Trays will lock, automatically, in the open and closed positions. Manual-type locks will not be acceptable.

FLOOR MATTING

All compartment floors shall be lined with black Mateflex 13" X 13" x 9/16" interlocking tiles with tapered edging at the front compartment opening.

EXTRA MATTING

Ten (10) extra black Mateflex 13" X 13" x 9/16" interlocking tiles will be provided for future repair or replacement.

COMPARTMENT DOORS

Doors to be fabricated of 304 grade stainless steel with 18 gauge inner and outer panels.

The doors shall be 3/4" thick and reduce the compartment depth by approximately 5/8" with the door closed. The double-panel design provides strength and a tight fit with 5/8" insulation installed between the panels for sound dampening.

Doors shall be of a rigid design. Door outer panel edges will be folded and welded to the inner panel. Welding of the inner panel directly to the outer panel face shall not be permitted due to distortion caused by welding. The use of body filler prior to painting of the outer door panels shall not be permitted. **No Exception.**

Each door is to have closed-cell rubber seal to provide a weatherproof seal between the door and compartment.

The compartment doors shall pivot on full length stainless steel piano hinges with a 3/16" pin diameter. Hinges shall be welded to compartment wall and bolted to doors with 10-24 stainless steel bolts.

Compartment doors will have stainless steel flush bent D-ring handles. Latching mechanism shall be non-locking safety slam positive latch. Gasket material is placed between the door handles and outer door panels to prevent electrolytic reaction between dissimilar metals to protect paint finish. Mechanism is enclosed in stainless steel not exposed to equipment stored in compartment.

An inner two-point latch shall be provided on the second door of all double doors with a rubber-covered pull cable, when applicable.

Interior of doors shall be left natural stainless steel with swirl finish applied to give a lasting and pleasing appearance.

DRIP RAILS

Bright aluminum J-channel shall be provided over each lower side body compartment, and at the front and rear of the compartments.

AMDOR™ BRAND ROLL-UP COMPARTMENT DOOR

The RR Compartment door shall be an AMDOR™ brand roll-up door, with the following features:

- 1" aluminum double-wall slats with continuous ball-and-socket hinge joint, designed to prevent water ingress and weather tight recessed dual durometer seals
- Double-wall reinforced bottom panel with stainless steel lift bar latching system
- Bottom panel flange with cutouts for ease of access with gloved hands
- Reusable slat shoes with positive, snap-lock securement
- Smooth interior door curtain to prevent equipment hang-ups
- One-piece aluminum door track/side frame
- Top gutter with non-marring seal
- Non-marring recessed side seals with UV stabilizers to prevent warpage
- Dual-leg bottom seal with all wear component material to be Type 6 Nylon
-

Door ajar switch system shall be provided by AMDOR™ and shall NOT include magnetic, proximity-based components. Switch device shall be a military-grade contact switch, capable of meeting MIL-S-8805, which can only be activated through positive engagement of the lift bar. Door striker will include support beneath the lift bar to prevent door curtain bounce. The door will have an anodized finish.

ROLL-UP DOOR MODIFICATION - PULL STRAP

One (1) nylon webbing pull strap shall be provided on the interior of each roll-up door. The strap shall aid in the closing of taller compartment doors.

DOOR CLOSURES

All vertically hinged doors shall have power lift, gas-filled cylinders installed.

Closure shall assist in the closing of door once it has past the halfway point.

DOOR CLOSURES

All horizontally hinged doors shall have power lift, gas-filled cylinders installed. Doors shall be held open at a 90 degree angle to the body.

Closure shall assist in the closing of door once it has past the halfway point.

ELECTRICAL AND LIGHTING

ELECTRICAL MANAGEMENT SYSTEM

The apparatus shall be equipped with a multiplex electrical system. The multiplex system shall consist of all solid-state components, contained inside aluminum extrusions, referred to as "nodes." Each node shall consist of (24) output channels and (24) input channels. All inputs and outputs will be configured into a scaleable electrical harness utilizing Duetsche connectors. The nodes must be waterproof and not require special mounting requirements.

The system, at a minimum, shall be expandable, and shall be capable of performing the following functions:

- Load management sequencing
- Switch loads
- Receive digital and analog signals
- Perform and report diagnostics
- Continuously report vehicle status

Real time data can be reported and displayed through several operator interface modules. The VFD is the display, user interface display. As an option, the EL "Vista" provides a built-in, audible alarm and menu-driven, input switches.

Placement of nodes throughout the apparatus enables a reduction in wire harness bundles, elimination of redundant harnesses and separate circuit boards, relays, and circuit breakers, electrical hardware, separate electrical or interlock subsystems, and associated electronics for controlling various electrical loads and inputs.

The multiplex system shall be field-reprogrammable and reconfigurable by any authorized dealer or service center. This complete system shall eliminate the need for the following separate components or devices: load manager, load sequencer, warning lamp flasher, headlamp flasher, door open notification system, interlock modules, separate volt meter and ammeter and temperature monitor.

The Base System Shall Include:

- Total load management
- Load shedding capabilities
- Load sequencing capabilities
- Onboard diagnostics readout
- Very reliable, solid-state hardware
- Error reporting
- Display analog data (pressure, temperature...)
- Continuous system monitoring and reporting
- Emergency warning lamp flasher
- Door-ajar system
- Field-configurable
- Expandability capabilities
- Advanced PC diagnostics

As-built wiring harness drawings and a master circuit list of electrical circuits installed by the apparatus builder shall be furnished in the delivery manuals. These schematics will show the electrical system, broken down into separate functions, or small groups of related functions. Schematics shall depict circuit numbers, electrical components, harnesses, and connectors from beginning to end.

All wiring and electrical equipment shall meet NFPA 1900, (2024 edition,) and SAE standards. A master optical warning device switch that energizes all of the optical warning devices shall be provided.

The optical warning system shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right of way. The other mode shall signal that the apparatus is stopped and is blocking the right of way. Switching of modes shall be controlled by the parking brake.

All wiring harnesses and associated wiring shall be secured with nylon ultraviolet-resistant cable ties or bolted to the body with cable clamps.

Polyolefin "heat-shrink" tubing with adhesive or Deutsch watertight connectors shall be used on all exterior wiring connections.

Flexible, non-conductive polyurethane film shall be sprayed on all terminal studs, relays, starter, batteries, etc., to prevent corrosion.

JUNCTION BOX

The electrical junction box for all 12 volt wiring shall be located in a convenient location. It will be recessed into the compartment wall, so as not to protrude into the storage area. It shall be protected by a removable access panel. The compartment shall be sealed and weather proof. All components in the compartment shall have identification tags.

CLEARANCE LIGHTS

All required clearance lights shall be provided at the rear and on each side of the unit to meet federal regulations. All lights will be LED-type with a five (5) year warranty.

On apparatus 30 feet in length or longer, an amber LED turn signal light with stainless steel flange shall be mounted, one (1) each side, in rear wheel well area at approximately running board height.

LED STEP AREA LIGHTING

Four (4) step area lights shall be provided, one (1) mounted each side on the front compartment face, to illuminate the panel running board steps, and two (2) mounted at the rear of the unit to illuminate the rear tailboard step. These lights shall be activated when the parking brake is applied. Whelen 3SCOCDCR series 3.00" round LED lights shall be utilized. Depending on body application, the lights will either be mounted in a rubber grommet or surface-mounted with a chrome flange.

HAZARD LIGHT

A red flashing light shall be located in the driving compartment, and shall be illuminated automatically whenever the apparatus parking brake is not fully engaged **and**:

- Any passenger or equipment compartment door is open
- Any ladder or equipment rack is not in the stowed position
- A stabilizer system is deployed
- A powered light tower is extended
- Any other device is opened, extended, or deployed that creates a hazard or is likely to cause damage to the apparatus if the apparatus is moved.

The light shall be marked "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

LICENSE PLATE LIGHT

One (1) Trucklite model 15055 LED license plate light and bracket shall be provided on the rear of the unit.

EMERGENCY WARNING LIGHT SWITCH CONTROLS

All warning light switches shall be mounted in the cab in a readily accessible location.

The master switch and individual switches furnished with custom chassis shall be utilized to allow the preselection of lights. The light switches are to be "rocker" type with an internal indicator light to show when the switch is energized. All switches are to be properly identified and mounted in a removable panel for ease of servicing. Identification of the switches shall be done by either printing or etching on the switch panel.

WHELEN M6FCV4 QUAD CLUSTER REAR DOT LIGHTING

BACKUP LIGHTS

Two (2) Whelen model M6BUW Super LED backup lights

STOP/TAIL LIGHTS

Two (2) Whelen model M6BTT series Super LED Brake/Tail lights

DIRECTIONAL LIGHTS

Two (2) Whelen model M6T series Super LED arrow directional turn signal lights

The backup lights, stop/tail lights, and directional lights along with rear lower level warning lights shall be installed on the lower rear face of the unit and shall be recessed in chrome plated flange.

COMPARTMENT LIGHTS

SoundOff Signal model ECVCL LED compartment lighting shall be provided in each compartment. The lighting shall be mounted behind the door track on both sides of the compartment.

All compartment lighting shall be automatic by the opening and closing of the door.

All main apparatus body compartments shall have door ajar switches.

LED GROUND LIGHTING

The apparatus shall be equipped with lighting capable of providing illumination at a minimum level of two (2) footcandle on ground areas within 30.00" of the edge of the apparatus in areas designed for personnel to climb onto the apparatus or descend from the apparatus to the ground level. Lighting designed to provide illumination on areas under the driver and crew riding area exits, which shall be activated automatically when the parking brake is set **and also have a switch**. Lights shall be installed in a manner that illuminates all walkways and steps for safe operation of the apparatus.

TecNiq E10-WSOO-1 6.00" Red LED lights mounted in a stainless steel bracket shall be utilized.

Two (2) lights mounted under the rear step.

One (1) light located on each side under the pump panel running boards.

PUMP COMPARTMENT LIGHT

One (1) SoundOff model ECVCSLLED10-10" LED pump compartment light shall be provided within the pump enclosure. The control switch shall be located on the pump operator's panel.

HOSE BED LIGHTS

There shall be two (2) TecNiq (model E10-W000-1) 6.00" LED lights with clear lens lights mounted at the front of the hose bed. The lights will be activated by a switch located on the pump panel.

DUNNAGE AREA LIGHTS

There shall be two (2) Whelen 3SCOCD CR series 3.00" round LED lights provided and mounted in the dunnage area to provide adequate illumination of this area. The lights will be activated when the parking brake is applied.

NFPA APPROVED UPPER LEVEL LIGHT PACKAGE

ZONE A - FRONT UPPER

A cab roof light bar will be furnished with the custom chassis.

ZONE B & D - SIDE UPPER

Two (2) Whelen M7 Super LED lights with chrome bezels will be mounted one each side on the upper front side corners of the body.

Two (2) Whelen M7 Super LED lights with chrome bezels will be mounted one each side on the upper rear side corners of the body.

ZONE C - REAR UPPER

Two (2) Whelen M7 Super LED lights with chrome bezels will be mounted on the upper rear of the body.

UPPER LEVEL LIGHT LENS COLOR

The upper level lights shall have red lenses.

WHELEN LOWER LEVEL LIGHTING

ZONE A - LOWER

Two (2) LED lights provided by chassis manufacturer.

ZONE B & D- SIDE LOWER

One (1) LED lights provided by the chassis manufacturer.

Two (2) M7 Super LED lights with chrome bezel mounted one (1) each side in the rear body fender area.

ZONE C - LOWER

Two (2) M6 Super LED lights mounted on the lower rear of the apparatus in M6FCV4 chrome housing.

LOWER LEVEL LIGHT LENS COLOR

The lower level lights shall have red lenses.

ARROW STICK

One (1) Whelen TAZ86 LED Traffic Advisor light shall be mounted center rear of unit. The TACTL5 control head shall be mounted in the chassis cab. 1.74" high x 2.17" deep x 36.00" long

The unit shall include eight (8) Linz6 LED lamps with amber lens.

ELECTRONIC SIREN

The electronic siren will be furnished with the custom chassis.

SIREN SPEAKER

The siren speaker will be furnished with the custom chassis.

FOOT SIREN SWITCH

The chassis-supplied driver-side momentary floor mounted air horn foot switch shall be disconnected from air horn switching and reassigned to control the electronic siren.

FOOT SIREN SWITCH

There shall be a Linemaster SP-491-S119 momentary floor mounted foot switch provided for Electronic Siren operation and installed on the passenger's side floor in the cab.

WHELEN PIONEER FLOOD/SPOT SURFACE MOUNTED LIGHTHEAD

Whelen Pioneer Plus™ Model # PCPSM1C single-panel LED combination spot/flood lights shall be provided. The 76 watt +12v DC single Pioneer lighthouse shall incorporate Super-LED® combination flood/spot light installed in ABS Cycloc™ resin surface mount housing. The surface mount housing will be chrome plated. The PCPSM1C configuration shall consist of 12 white Super-LEDs for the spot light with a specialized spot reflector on the bottom, 24 white Super-LEDs in the flood light with a clear optic collimator/metalized reflector assembly on the top, and a clear non-optic polycarbonate lens. The Pioneer flood/spot light shall have 7,800 usable lumens. The PCPSM1C new combination optic design projects light directly down at 5° and producing illumination to the side of the vehicle arching upward to a 90° pattern of light.

Four (4) lights shall be provided and mounted one (1) each side of the dunnage area and two (2) on the rear of the body.

The lights will be controlled by a switch located in the cab labeled Side and Rear Scene Lights. The rear lights will also be activated when the transmission is shifted into reverse.

BODYSIDE SCENE LIGHTS

The Body shall include two (2) Whelen model Summit S30MB scene lights installed one (1) on each side centered over the body.

The housing shall be powder coated Black

XANTREX INVERTER

A Xantrex3000 watt Freedom X3000 inverter shall be provided and mounted the L1 compartment and wired to the chassis battery system.

It shall be wired to a 20 amp household duplex AC receptacle located near the inverter.

SHORE/INVERTER POWER OUTLET IN COMPARTMENT

Seven (7) 120 VAC outlets shall be installed in compartment for charging tools. The outlet will be powered by shore power while the apparatus is connected to station power and by the inverter while on scene.

LOCATION: One (1) 120VAC outlet in each main body compartment.

SHORE/INVERTER BOX IN CAB

A four way junction box will be provided and mounted in the rear facing compartment in the cab. The outlet will be powered by shore power while the apparatus is connected to station power and by the inverter while on scene.

PAINT, LETTERING, AND GRAPHICS

Vendor to provide Renderings of all graphics and lettering to purchaser for review and sign off before any work is completed.

PAINT AND PREPARATION

All metal surfaces will be properly sanded, prepared and finished ready for our Axalta Coating Systems pretreatment. This is done to ensure optimum adhesion, corrosion resistance, and durability.

After pretreatment, 1220S Axalta Coating Systems 5000 URO primer filler is applied designed to fill any minor surface defects and provide an adhesion layer between the pretreatment and the Imron Base Coat/Clear Coat. This is also applied to improve color gloss, retention, and durability of the paint.

Next the URO primer will be sanded to a smooth pre-painting surface. The surface will be decontaminated and prepared for application of High Solids Axalta Coating Systems Productive Base Coat/Clear Coat finish to complete the finished paint process.

A full inspection is performed of Defects, Depth Imagery, Gloss, Film Build, Color Match and Texture, all to meet or exceed Axalta Coating Systems OEM fleet finish specifications.

Body assemblies that cannot be finish painted upon assembly shall be painted prior to finish assembly. All doors are removed and painted separate from the body.

Prior to reassembly and reinstallation of lights, handrails, door hardware, and any miscellaneous items; a gasket material or silicone sealant shall be applied to prevent damage to the finish painted surfaces and to protect against electrolysis between dissimilar metals.

Touch up paint shall be provided for each color paint used.

The complete apparatus body will be painted a single color to match the lower color of the cab. The cab shall remain as painted from the chassis supplier.

Top cab Black – Axalta L0001 EW – Basecoat Clearcoat 3.5 VOC / Bottom Cab and rest of apparatus – Red – Axalta L0934EW – RED Imron Elite Basecoat Clearcoat 3.5 VOC

LETTERING

Lettering shall be provided. It shall be computer generated, non-reflective, SignGold vinyl 22Kt gold lettering with a black border.

Computer generated lettering provides a proportional layout design and durable finish.

Included will be a maximum of sixty five (65) three (3) inch letters.

SINGOLD 8.00" LETTERS

Four (4) 8.00" SignGold vinyl 22Kt gold letters with black border will be provided.

"EHFD" on front bumper

REFLECTIVE STRIPING

A 1"-6"-1" wide BLACK reflective stripe shall be applied to the unit in a straight line.

Per NFPA 1900, 2024 edition, section 12.8.3.1 this shall include at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the apparatus.

VINYL EMBLEMS

Two (2) customer supplied emblems shall be provided, one (1) each side as directed by the Fire Dept.

UNIT ID

Unit numbers will be lettered on each side of the truck as directed by the Fire Dept.

REFLECTIVE CHEVRON - NFPA 1900, 2024 edition, section 12.8.3.2

50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" in width.

Diamond Grade Stripe Colors will be NFPA Red and Yellow.

EQUIPMENT

A \$20,000.00 (twenty thousand) contingency line item is included in this specification, to be used for equipment mounting or other unforeseen expenses. Any unused portion shall be returned to the customer at final inspection as a deduction from the final payment or in kind. The uses of contingency funds must be approved in writing by purchaser prior to any work being completed.

The following equipment shall be provided along with any necessary mounting brackets.

NFPA EQUIPMENT CLARIFICATION

Any equipment specified in the "Minor Equipment" section (e.g. hose, nozzles, adapters, AED, traffic cones, traffic safety vests, etc.) of NFPA 1900 for each apparatus classification which is not specified in this proposal will be considered to be customer supplied.

DEALER SUPPLIED EQUIPMENT

Equipment supplied by the Dealer will be as follows:

- 1500' 5" hose
- 300' 3" hose with 2.5" couplings
- 450' 2.5" Hose
- 400' 1.75" hose
- One (1) Supervac V18 BL SP Fan

SUCTION HOSE

Two (2) Harrington 6" x 10' and one (1) 6" X 8' light weight PVC suction hoses with male and 6" long handled female couplers shall be provided.

10' FOLDING LADDER

A Duo-Safety model 585-A-10, 10' folding ladder shall consist of 1-section aluminum ladder with rubber feet shall be provided and installed in customer specified location. Ladder shall meet or exceed the latest NFPA standards.

14' ROOF LADDER

There shall be a 14', Duo-Safety model 775-A-14, roof ladder of single section aluminum with folding steel roof hooks on one end and steel spikes on the other end. Ladder shall meet or exceed latest NFPA standards.

24' EXTENSION LADDER

A Duo-Safety model 900-A-24, 24' extension ladder shall consist of 2 aluminum sections. Ladder shall meet or exceed NFPA standards.

WHEEL CHOCKS

Two (2) Zico AC32 wheel chocks will be provided and mounted under the left front compartment.

SPANNER WRENCH SET W/HYDRANT WRENCH

Two (2) sets of Kochek style K45-3-KBR spanner wrenches shall be provided and mounted in customer-specified location. Includes (1) hydrant wrench and (2) spanner wrenches with mounting bracket.

Location: - Pump panel area, on each side

SPANNER WRENCH SET

Two (2) sets of Kochek style K46-2-KBR spanner wrenches shall be provided and mounted in customer specified location. Includes (2) spanner wrenches with mounting bracket.

Location: Rear of unit, one each side

HEADSET SYSTEM

A SetCom LiberatorMAX wireless headset intercom system shall be installed. The system shall consist of six (6) wireless headsets, a master station, and a radio interface for the customer's Kenwood VM7000 series radio. The driver and officer headsets (model CSB-900MAX) will have radio transmit capability. The four (4) crew headsets (model CSB-901MAX) will be equipped for intercom only.

One (1) headset shall be supplied as a spare. Seven (7) total.

SAFETY FIRE VEST

The NFPA required Safety Vest will be supplied and installed by the purchaser before the truck is placed into service.

TRAFFIC CONES

The NFPA required traffic cones will be supplied and installed by the purchaser before the truck is placed into service.

AUTOMATIC EXTERNAL DEFIBRILLATOR (AED)

The NFPA required AED will be supplied and installed by the purchaser before the truck is placed into service.