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Department of Public Works

Invitation to Bid

Northfield Volunteer Fire Company Fire Engine

Litchfield, Connecticut

The Town of Litchfield is accepting bids for the Northfield Volunteer Fire Company Engine One replacement. All bids must be submitted on forms and in accordance with specifications supplied by the Town of Litchfield, Public Works Department, 101 Russell Street, Litchfield CT. Bids will be received at the Office of the First Selectman, 74 West Street, Litchfield, CT, 06759 until 2:00 p.m. on ~~October 26, 2023~~ and will be opened and read publicly at that time in said office. Bids can be downloaded from the Town of Litchfield web site: www.townoflitchfield.org.

The Town of Litchfield reserves the right to waive the technical defects in the bids, to reject any bid which does not conform to the terms and conditions described in the bid documents, to accept or reject any part of any bid and to reject all bids and again invite bids.

No bidder may withdraw a bid within 60 days after the bid opening. EOE-AA.

Addendum #1

Last Questions: October 26, 2023

New Bid Opening: November 2, 2023 at 2:00 p.m.



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Instructions to Bidders

1. Intent

The intent of these specifications is to obtain a Vendor to furnish and deliver a Fire Engine for the Northfield Volunteer Fire Company per bid specifications attached. Vendor shall have adequate licenses, equipment, and materials for this project to insure completion from the agreed upon starting date.

All Bidders shall observe the following instructions and specifications:

2. General Provisions

Final Questions cut off: ~~October 20,~~ **October 26, 2023** 3:30 p.m.

Bid Opening: ~~October 26,~~ **November 2 2023** 2:00 p.m. at the First Selectman's Office, 74 West Street, Litchfield

Board of Fire Commissioners approval: November 9, 2023

Board of Selectman select winning bid: November 21, 2023

Successful bidder notified via email: November 22, 2023

Bid Return Envelope: Bidders shall submit bids in an envelope clearly marked, with the bid title and opening date to prevent a sealed bid from being opened prior to the opening date. Any bid not so marked and opened by the Town shall be rejected. The following forms must be submitted:

- A. Bid Schedule
- B. Hold Harmless Agreement and Supplemental Agreement
- C. Non-Collusion
- D. Non-Discrimination
- E. References
- F. Bid Bond

3. Proposal Questions

Any questions pertaining to the scope of the work or content or procedure for submitting proposals should be directed to David Carroll by phone or email and to be received no later than ~~October 20, 2023~~ **October 26, 2023**. Any questions received after that date will not be answered. Contact information is as follows:

David Carroll
Engine 1 Committee Chairman/Deputy Chief
Cell: 617-596-6980
Administrator@northfieldfire.org

4. Basis of Award

It is intended this Contract shall be awarded to the Bidder that best meets the needs of the Town of Litchfield with respect to qualifications, contractor's submitted start date and cost. Qualifications shall include the ability of the Contractor to deliver the equipment within the stated time frame.

5. Notice of Award

The Town shall give Notice of Acceptance of a bid to the successful bidder by mail / or email to the Bidder's address stated in the bid. Individuals are invited to attend the Bid Opening, with official bid results pending notification of the successful bidder.

6. Award of Contract

The Town reserves the right to reject any and all bids for any reason the Town deems advisable, and to award contract or contracts to any Contractors bidding on the work, regardless of the amount of bid.

7. Bid Security

A bid bond or certified check of **10% required** for this bid.

8. Performance; Labor and Material Bond

A Performance Bond or Certified Check **is required** for this bid.

9. Scope of Work Change

The Town reserves the right to change the scope of the project after the bid is awarded, without penalty to the Town. All changes in scope will be issued in writing by the Northfield Volunteer Fire Company.

10. Substitution of Named Brands

Should brand names appear in this bid, before bidding on any item considered equal to or better than a named item, the Bidder must get written approval from the Northfield Volunteer Fire Company.

11. Price, Discounts, and Payment

Prices bid shall not include any taxes, Local, State, or Federal, as the Town is not liable. In addition to the price bid, each Bidder may quote binding discounts, which will be considered when making the award.

12. Delays

Contract time delays for completion of work shall be authorized in writing by the Northfield Volunteer Fire Company.

13. Assignment of Contract

Contractor shall not sublet, sell, transfer, assign, or dispose of contract or any portion thereon or of right, title, or interest therein or obligations thereunder, without written consent of the Town.

14. Acceptance of Subcontractor

Submission of name of Subcontractor in proposal shall be deemed to constitute an acceptance by Contractor, if awarded contract of bid, of such Subcontractor. Any alteration therein, after award of contract, shall be subject to the approval of the Town.

15. Basis of Payment

Payment for this work shall be at the lump sum bid for work completed and accepted, except as noted herein and shall include all equipment, materials, labor, and tools incidental to the completion of this work.

16. Payment Requests, Retainage and Guarantee Period

Contractor must submit a payment request for payment once delivery and acceptance has been made.

17. Insurance

The contractor will file with the Town of Litchfield, the following evidence of insurance. Certificates must be on file with the Town before acceptance of Bid or work commences.

Workers Compensation

Coverage A: Statutory

Coverage B: Employers Liability:

Bodily injury by accident	\$ 100,000 per person
Bodily injury by disease	\$ 100,000 per person
Bodily injury	\$ 500,000 aggregate

Comprehensive Commercial Liability

Bodily injury; General Limit	\$ 1,000,000 aggregate
Products/Completed Operations	\$ 1,000,000 aggregate
Personal and Advertising Injury	\$ 1,000,000 aggregate
Each Occurrence	\$ 1,000,000 aggregate
Fire Damage Limit	\$ 1,000,000 aggregate
Medical Expenses	\$ 100,000 per person

Coverages:

Premises/Independent Contractors
Contractual/Completed Operations/Products
Contractual/Liability will be Broad Form
XCU (explosion/collapse/underground utilities)
Comprehensive Broad Form Liability endorsement or Equivalent
Broad Form property Damage Liability

Automobile Liability

Bodily Injury	\$1,000,000 per person
Aggregate	\$1,000,000 per person
Property Damage	\$1,000,000 per person

Coverages:

All owned/non owned/hired/borrowed
Contractual liability to be included

Contractors must name the Town of Litchfield as an additional named insured on all certificates. All policies will provide thirty (30) days' notice of cancellation as well as ten (10) days' notice of material change in the policies to the First Selectman's Office of the Town of Litchfield.

18. Hold Harmless Agreement

The Contractor agrees to hold harmless the Town of Litchfield and its respective officers, agents, and employees from any loss, costs, damages, expenses, judgements, and liability whatsoever kind or nature howsoever the same may be caused resulting directly or indirectly by any act of omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable resulting in bodily injury including sickness and death, personal injury, or damage to property directly or indirectly, including the loss of use resulting therefrom as permitted by law. The Contractor will be required to sign the enclosed Hold Harmless Agreement prepared by the Town.

19. Supplemental Agreement

The Contractor named below is an independent contractor and neither the Contractor nor its employees nor the Contractor's Subcontractor(s) under any circumstances, will be considered servants or agents of the Town of Litchfield and the Town will be at no time legally responsible for any negligence or other wrong doing by the Contractor, its servants or agents or the Contractor's Subcontractor(s). The Town will not withhold from contract payments to the Contractor any Federal or State unemployment taxes, Federal or State Income Taxes, Social Security Tax, or any other amount for benefits to the Contractor. The lump sum or unit charges for service provided does not represent gross wages and further the Town will not provide the Contractor any insurance coverage or other benefits, including Worker's Compensation, normally provided by the Town to its employees. The Contractor will be required to sign the enclosed Supplemental Agreement prepared by the Town

NORTHFIELD VOL. FIRE DEPARTMENT Pumper Specifications

Please bid these following revisions to the bid specifications as Bid - Option #1

Delete Swivel steamer
Delete Roll up doors
Delete 6 Speed transmission
Delete Swinging peg board for side tool compartment
Delete Pull out step for rear bumper 1
Delete 3 10 foot hard suction lines
Delete 24ft foot extension ladder
Delete 14ft roof ladder
Delete Attic ladder
Delete Hard cover/Aluminum hose bed cover
Delete Gravity Foam System
Delete Individual Inspection Trips (2)

INSTRUCTIONS TO BIDDERS

The purpose of these instructions and specifications are to describe the requirements, construction, and delivery of a Fire Fighting Apparatus as outlined herein for the NORTHFIELD VFC, here after referred to as the "Purchaser".

Bids will only be considered from companies which have an established reputation in the field of fire apparatus construction and have been in business for a minimum of twenty-five (25) years.

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

It is the bidder's responsibility to see that their proposals arrive on time. Late proposals, facsimiles, telegrams, or telephone bids will not be considered.

The purchaser reserves the right to accept or reject any or all bids on such basis as the purchaser deems to be in its best interest.

All bid prices shall remain effective for 45 calendar days from the bid opening date.

The apparatus is to be of current year of manufacture and is to be new.

The bid price shall not include any local, state, or federal taxes.

DELIVERY

Each bidder shall clearly state the delivery date of the vehicle in calendar days. This shall be after receipt of the signed contract.

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the purchaser a complete unit equipped as herein specified, with a view of obtaining the best results and the most acceptable apparatus for the purchaser.

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 1901 (2016 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.

Any questions pertaining to the scope of the work or content or procedure for submitting proposals should be directed to David Carroll by phone or email prior to bid submission date.

David Carroll
Engine 1 Committee Chairman/Deputy Chief
Cell: 617-596-6980
Administrator@northfieldfire.org

LIABILITY

The bidder, if his/her bid is accepted, shall defend any and all suits and assume liability for the use of any patented process, device or article forming a part of the apparatus or any appliance furnished under the contract to the extent allowable under the law.

COMMERCIAL GENERAL LIABILITY INSURANCE

Each bidder shall supply proof of product liability and facility insurance equal to or exceeding \$5,000,000. This shall be provided as part of the proposal.

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 the column provided 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.

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.

BID BOND

A bid bond will be submitted with the bidder's proposal. The bond will be for an amount equal to 10% of the proposed bid price. Failure to provide an acceptable, valid bid bond with the proposal will result in the immediate rejection of the bidder's proposal.

DATA REQUIRED OF THE CONTRACTOR - NFPA 4.20

NFPA 4.20.1 Fire Apparatus Documentation

The contractor will supply, at the time of delivery, at least one (1) copy of the following documents:

- (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
 - f. Rear tire size and total rated capacity in pounds
 - g. Chassis weight distribution in pounds with water and manufacturer-mounted equipment front and rear
 - h. 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
 - j. Electrical system voltage and alternator output in amps
 - k. Battery make, model, and capacity in cold crank amps (CCA)
 - l. 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. Pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
 - p. 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. Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms)
 - t. Paint manufacturer and paint number(s)
 - u. Company name and signature of responsible company representative
 - v. Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and over all fire apparatus (with the water tank full but without personnel, equipment, and hose)
- (2) If the apparatus is a mobile foam fire apparatus, the certification of foam tank capacity
 - (3) Certification of compliance of the optical warning system
 - (4) Siren manufacturer's certification of the siren
 - (5) Written load analysis and results of the electrical system performance tests
 - (6) Certification of slip resistance of all stepping, standing and walking surfaces
 - (7) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
 - (8) If the apparatus has a fire pump, and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions
 - (9) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications
 - (10) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed
 - (11) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test (12) If the apparatus has a fire pump, the certification of inspection and test for fire pump.
 - (13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test
 - (14) When the apparatus is equipped with a water tank, the certification of water tank capacity
 - (15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device
 - (16) If the apparatus has an aerial device, all the technical information required for inspection to comply with NFPA 1911
 - (17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy and the final installer's certification the foam proportioning system meets this standard
 - (18) If the apparatus has a CAFS, the documentation of the manufacturer's pre-delivery tests

- (19) If the apparatus has a line voltage power source, the certification of the test for the power source
- (20) If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification, and the results of the testing of the air system installation
- (21) Any other required manufacturer test data or reports

OPERATION AND SERVICE DOCUMENTS - NFPA 4.20.2

NFPA 4.20.2.1 - The contractor shall deliver with the fire apparatus complete operation and service documentation covering the completed apparatus as delivered and accepted.

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

The contractor shall also deliver with the fire apparatus 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 the 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 chassis, any major components such as 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) Recommend service procedures
- (16) Troubleshooting guide
- (17) Apparatus body, chassis, and other component manufacturers' warranties
- (18) Special data required by this standard
- (19) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus
- (20) One (1) copy of the latest addition of FAMA's Fire Apparatus Safety Guide

NFPA 4.20.2.4 - The contractor will deliver with the apparatus all manufacturers' operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

HIGHWAY PERFORMANCE NFPA 4.15

NFPA 4.15.1 - 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.

NFPA 4.15.2 - The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 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.

NFPA 4.15.3 - If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gallons, or the GVWR of the vehicle is over 50,000 lb, the maximum top speed of the apparatus shall not exceed either 60 mph or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

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 driver's 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 new motorized Fire and Rescue Apparatus 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 part or 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 galvanized or 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 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 winning bidder will coordinate the warranty for the specified vehicle from bumper to bumper. While all fire apparatus have individual component warranties, the builder must 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 insure proper break in of all components while still under warranty.

A qualified delivery engineer representing builder 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 to (2) 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 four (4) 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

1. Wheelbase of chassis:
2. Cab-to-axle dimension of chassis:
3. Overall length of apparatus:
4. Overall width of apparatus body:
5. Overall height of apparatus:
6. Overall length of body including rear step:

7. Front overhang from center of front axle:
8. Rear overhang from center of rear axle:
9. Pump panel width:

CHASSIS SPECIFICATION

MODEL

The chassis shall be a Metro Star model, no exceptions. 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 2024 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 1000 gallons per minute (3785 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 23,000 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 27,000 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 750 gallons (2839 liters) to 1250 gallons (4732 liters). The water and/or foam tank(s) shall be supplied and installed by the apparatus manufacturer.

CAB STYLE

The cab shall be a custom, fully enclosed, LFD 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 144.60 inches with 67.50 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 65.38 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 three (3) air bags in the following locations:

- 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) master module and a slave sensor in applicable configurations.

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 a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.

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 a single color per customers specified paint color.

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 primary/lower paint color shall be Red, matched to existing Northfield Rescue 1. Paint ID# provided.

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 silver gray 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 full length in design to fully enclose the lower cab steps. 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 10.00 inches wide X 21.19 inches high. The compartment size shall be 11.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

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 10.00 inches wide X 21.19 inches high. The compartment size shall be 11.34 inches wide X 21.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 32.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 10.00 inches long and shall include three (3) bright white Gen3 LEDs.

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 Weldon Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901 and shall be integrated with the Weldon 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 B USB connection point, remotely mounted in the left side foot well.

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. A 225 amp master switched and fused power and ground stud shall be provided and installed on the chassis near the left hand battery box for OEM body connections.

AUXILIARY ACCESSORY POWER

An auxiliary set of power and ground studs shall be provided and installed in the officer side under seat storage compartment. The power and ground studs shall be circuit protected with a 40 amp breaker. The studs shall be 0.38 inch diameter and be 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 X12 engine. The X12 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 500 horse power at 1900 RPM and shall be governed at 2000 RPM. The torque rating shall feature 1700 foot pounds of torque at 1000 RPM with 720 cubic inches (11.8 liter) of displacement.

The X12 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 2021 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CK-4 low ash engine oil which shall be utilized for proper engine lubrication.

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.

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.

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 a high-idle speed rocker switch and an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output. This device shall operate only when the engine is running and the transmission is in neutral 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 is released, or when the transmission is placed in neutral.

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 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.

ENGINE PUMP HEAT EXCHANGER

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant. This shall allow the use of water from the discharge side of the pump to assist in cooling the engine.

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 COOLANT OVERFLOW BOTTLE

A remote engine coolant overflow expansion bottle shall be provided in the case of over filling the coolant system. The overflow bottle shall capture the expansion fluid or overfill rather than allow the fluid to drain on the ground.

ENGINE EXHAUST SYSTEM

The exhaust system shall include an end-in end-out horizontally mounted single module after treatment device, and downpipe from the charge air cooled turbo. The single module shall include four temperature sensors, diesel particulate filter (DPF), urea dosing module (UL2), and a selective catalytic reduction (SCR) catalyst to meet current EPA standards. The selective catalytic reduction catalyst utilizes a diesel exhaust fluid solution consisting of urea and purified water to convert NOx into nitrogen, water, and trace amounts of carbon dioxide. The solution shall be mixed and injected into the system through the DPF and SCR.

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 single module after treatment 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 module shall be mounted below the frame in the outboard position.

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 six (6) usable gallons and shall be mounted on the left hand side of the chassis frame behind the batteries below the frame.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be 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

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

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 Five (5) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0140. 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 select five (5) speeds of operation. The sixth 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 and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

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 Waterous CSUC20 or C22 pump.

MIDSHIP PUMP GEARBOX DROP

The Waterous pump gearbox shall have a “C” (medium length) drop length.

MIDSHIP PUMP RATIO

The ratio for the midship pump shall be 2.27:1.

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 97.00 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 Racor GreenMAX 6600R fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve and a see-through cover to allow visual inspection of fuel and filter condition. The Racor 6600R shall meet engine requirements for particulate size, collection capacity, removal efficiency, and water removal efficiency. The filter shall be capable of handling a maximum flow rate of 150 gallons per hour.

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

An instrument panel lamp and audible alarm which indicates when water is present in the fuel-water separator shall also be included.

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.

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 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 23,000 pounds. This rating shall require special approvals from the wheel manufacturers.

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 an eleven (11) leaf spring pack in which the longest leaf measures 53.38 inch long and 4.00 inches wide. The springs shall be shot peened for long life and include a military double wrapped front eye. The springs shall be bolted in place with M20 10.9 bolts and have replaceable polyurethane bushings in the spring eyes. The spring capacity shall be rated at 23,000 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 an 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.

POWER STEERING GEAR

The power steering gear shall be a TRW model TAS 85 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-25-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 27,000 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 0.63 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.

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 12R-22.5 16PR "H" tubeless radial XDN2 all-weather tread.

The rear tire stamped load capacity shall be 27,120 pounds per axle with a nominal speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Intermittent Service Rating maximum load capacity shall be 29,020 pounds per axle with a maximum speed of 75 miles per hour when properly inflated to 120 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 5.38:1.

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 rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment as an integral part of the wheel surface. The inner rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch aluminum wheels with a polished inner and outer surface and Alcoa Dura-Bright® wheel treatment as an integral part of the wheel surface. 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 loose 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 7.00 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 system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted on the center of the dash within easy access of the driver and the officer positions.

REAR BRAKE SLACK ADJUSTERS

The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

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 naturally aspirated Wabco® SS440 single cylinder pass-through drive type compressor which shall be capable of producing 26.0 CFM at 1200 engine RPMs. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation.

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

Heated, automatic moisture ejectors with a manual drain provision shall be installed on all reservoirs of the air supply system. The manual drain provision shall include an actuation pull cable coiled and tied at each drain valve. The supplied cables when extended shall be sufficient in length to allow each drain to be activated from the side of the apparatus.

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.

AIR INLET CONNECTION

A Kussmaul air automatic eject connection for the shoreline air inlet shall be supplied.

AIR INLET/ AUTO EJECT CONNECTION COVER

The air auto eject connection shall be red in color.

AIR INLET LOCATION

The air inlet shall be installed on the left hand side of the cab ahead of the driver's door.

AIR INLET/ OUTLET FITTING TYPE

The air connector supplied shall be a 0.25 inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25 inch Automotive style and Parker 0.25 inch 10 Series connectors.

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 a minimum of 200.00 inches.

REAR OVERHANG

The chassis rear overhang shall be a minimum of 53.00 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.

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 extend vertically 2.00 inches above 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 diamond plate. Tread plate is not to be substituted.

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.

The apron warning labels shall be shipped loose for installation by OEM.

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. A drain is required at the lowest point.

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.

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 a pedestal mount to surface mount on a horizontal surface.

MECHANICAL SIREN LOCATION

The siren shall be pedestal mounted on the bumper apron on the furthest outboard section of the bumper on the driver side.

AIR HORN

The front bumper shall include two (2) Hadley brand E-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 on the exterior and a painted finish deep inside the trumpet.

AIR HORN LOCATION

The air horns shall be recess mounted in the front bumper face, one (1) on the right side of the bumper in the inboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the inboard position relative to the left hand frame rail.

AIR HORN SNOW SHIELDS

The air horns shall include snow shields which shall prohibit snow and debris from accumulating inside the horn and disrupting sound which shall be shipped loose.

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 one (1) Cast Products Inc. model SA4301, 100 watt speaker provided. The speaker shall measure 6.20 inches tall X 7.36 inches wide X 3.06 inches deep. The speaker shall include a flat mounting flange which shall be polished aluminum.

ELECTRONIC SIREN SPEAKER LOCATION

The electronic siren speaker shall be located on the front bumper face in the center position between the frame rails.

FRONT BUMPER TOW EYES

The bumper shall include two (2) painted tow eyes which shall be installed below 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 eye shall be 2.00 inches and include 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 above the battery box.

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 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 CONTROL RECEPTACLE

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

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 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 installed using black self locking window rubber.

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 manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

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 anodized 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 door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

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 door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

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 and ahead of the crew door which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

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 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

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.

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.

The air delivery plenums provide targeted airflow directly to the vehicle occupants. Six (6) adjustable louvers will provide comfort for the front seat occupants and ten (10) adjustable louvers will provide comfort for the rear crew occupants.

The system shall be capable of producing up to 12 FPM of air velocity at all occupant seating positions. 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 silver gray 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 aluminum trim molding. 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.

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.

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.

POWER POINT DASH MOUNT

The cab shall include two (2) 12 volt cigarette lighter type receptacles in the cab dash to provide a power source for 12 volt electrical equipment. The receptacles shall be wired battery direct.

The cab shall also include two (2) Dual universal serial bus (USB) charging receptacles in the cab dash rocker switch cutout to provide a power source for USB chargeable electrical equipment. Each USB receptacle shall include one (1) USB port capable of a 5 Volt-2.4 amp output and one (1) USB port capable of a 5 Volt-2.4 amp output. The receptacles shall be wired battery direct and include a backlit legend.

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 step shall feature a splash guard to reduce water and debris from splashing in to the step. The splash guard shall have drainage holes beneath the back of the step to allow debris and water 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 with a Flex-Tred® adhesive grit surface material.

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.

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 Spartan 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 gray 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 vinyl trim.

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be gray in color.

CAB PAINT INTERIOR DOOR TRIM

The inner door panel surfaces shall be painted with multi-tone silver gray texture finish.

HEADER TRIM INTERIOR PAINT

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

TRIM CENTER DASH INTERIOR PAINT

The entire center dash shall be coated with multi-tone silver gray 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 silver gray texture finish.

TRIM RIGHT HAND DASH INTERIOR PAINT

The right hand dash shall be painted with multi-tone silver gray 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 nine (9) switches. There shall be six (6) switches across the top of the panel and three (3) across the bottom of the panel. Five (5) of the top row of switches shall be rocker type and the left one (1) shall be the headlight switch. One (1) of the lower row of switches shall be rocker type and the left two (2) shall be the windshield wiper/washer control switch and instrument lamp dimmer switch.

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, wear resistant fabric made of durable low seam Durawear Plus™ 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™ meets or exceeds specification of the common trade name Imperial 1800. The material meets FMVSS 302 flammability requirements.

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 NVFC 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.

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 shall feature a SecureAll™ SCBA locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

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.

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.

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 rear facing outboard seat shall feature a Bostrom SecureAll™ self contained breathing apparatus (SCBA) locking system which shall store most U.S. and International SCBA brands and bottle sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the center of the bottom seat cushion for easy access and to eliminate hooking the release handle with clothing or other equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

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.

SEAT FORWARD FACING CENTER LOCATION

The crew area shall include one (1) forward facing center crew seat located directly behind the engine tunnel in the center of the cab.

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 forward facing center seat shall feature a SecureAll™ self contained breathing apparatus (SCBA) locking system which shall be one bracket model and store most U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

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.

SEAT FRAME FORWARD FACING

The forward facing center seating positions shall include an enclosed seat frame located and installed on the rear wall. The seat frame shall measure 42.38 inches wide X 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 two (2) access points to the seat frame storage area, one (1) on each side of the seat frame. Each access point shall be covered by a hinged door which measures 15.00 inches in width X 10.63 inches in height with an opening that measures 13.75 inches wide X 10.00 inches high.

SEAT MOUNTING FORWARD FACING CENTER

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

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 underseat storage compartment access doors shall have a multi-tone silver gray 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 aluminum with a chrome plated 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.

The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.

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 extruded, aluminum anti-slip exterior assist handle behind each cab door. The assist handle shall be made of extruded aluminum and shall be 1.25 inches in diameter with rubber inserts to enable non-slip assistance with a gloved hand.

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 613315 shall be provided and installed 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 vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an integral convex mirror in the mirror head below the flat glass to provide 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 mirror backs shall be constructed of vacuum formed chrome plated ABS plastic housings that are corrosion resistant and shall include an amber marker light. The mirrors shall be manufactured with the finest quality non-glare glass.

Additional forward mounted convex mirror for viewing front bumper from driver area

REARVIEW MIRROR HEAT SWITCH

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

TRIM LOWER SIDE

A stainless steel trim band, 10.00 inches high, with upper and lower black and chrome trim moldings, shall be installed on the lower exterior sides of the cab and doors. The trim shall be installed so that the top edge approximately 1.00 inch below the top of the front bumper, and shall be affixed without holes and fasteners.

TRIM LOWER SIDE FRONT

A stainless steel trim band, 10.00 inches high, with upper and lower black and chrome trim moldings, shall be installed on the lower exterior sides of the cab between the front bumper and the front doors. The trim shall be installed so that the top edge is approximately 1.00 inch below the top of the front bumper, and shall be affixed without holes and fasteners.

EXTERIOR TRIM REAR CORNER

There shall be mirror finish stainless steel scuff plates on the outside corners at the back of the cab. The stainless steel plate shall be affixed to the cab using two sided adhesive tape.

TRIM REAR WALL EXTERIOR

The exterior rear wall of the cab shall include an overlay of diamond plate which shall be 0.07 inches thick. This overlay shall cover the entire rear wall of the cab. Tread plate is not an acceptable substitute.

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) Spartan emblems. There shall be one (1) installed on the front air intake grille and one (1) emblem on each of the cab sides.

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 six (6) 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. The batteries shall be held in place by non-conducting phenolic resin hold down boards.

BATTERY BOX COVER

Each battery box shall include a steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

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.

The battery terminals shall not be utilized for auxiliary connections. The only acceptable auxiliary connections shall be for the cross over link from the left bank to the right bank, power for jumper studs and starter cables. All other auxiliary connections will use remote studs mounted in the battery box area. There shall be four (4) remote studs labeled as Common Power, Common Ground, Clean Power, and Clean Ground.

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 40 amp output for the chassis batteries and a 20 amp output circuit for accessory loads. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position and shall include a battery temperature sensor.

BATTERY CONDITIONER DISPLAY

A Kussmaul universal status center battery conditioner display shall be supplied. The display shall indicate full charge, low charge, charging, and a three (3) digit voltage reading. The battery conditioner display shall be mounted in front of the left side door just below the windshield.

ELECTRICAL INLET LOCATION

An electrical inlet shall be installed on the left hand side of the cab ahead of the front door rear of the bumper.

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 40/20 Charger - 8.5 Amps
Kussmaul 80 LPC Charger - 13 Amps
Kussmaul EV-40 - 6.2 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 red 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) Tecniq S170 LED cab marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level. The lights shall be amber with chrome bezels.

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.

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 centered on the flat surface of the steel channel bumper's angled front right and left corners.

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.

LIGHTBAR SWITCH

The light bar shall be controlled by a rocker switch located on the switch panel. There shall be an additional rocker switch to control the clear lights only. The switches shall be clearly labeled for identification.

FRONT SCENE LIGHTS

The front of the cab shall include two (2) Whelen Pioneer model PCH2 contour roof mount scene lights installed on the brow of the cab.

Each 150 watt lamp head shall incorporate a 12 volt DC Super-LED combination flood/spot light installed in a die-cast aluminum housing. Each lamp head shall use a collimator/metalized redux spot/flood reflector assembly with Proclera™ silicone optics and a clear non-optic polycarbonate lens. The lens/reflector assembly shall utilize a liquid injected molded silicone gasket to be resistant to water, moisture, dust, and other environmental conditions. The PCH2 shall be vibration resistant. The Pioneer PC boards shall be conformal coated for additional protection. Each combination flood/spot light lamp head shall draw 13.0 amps in spotlight mode and generate 17,750 lumens total. Each lamp head shall measure 4.25 inches in height X 14.00 inches in width. The lamp heads and brackets shall be powder coated white.

FRONT SCENE LIGHT LOCATION

There shall be two (2) scene lights mounted to the front brow of the cab inboard of the outer front marker lights.

FRONT SCENE LIGHTS ACTIVATION

The front scene lighting shall be activated by two (2) individual left and right front scene rocker switches on the dash with indicator lights. The individual switches shall be labeled "LH BROW LIGHT" and "RH BROW LIGHT".

SIDE SCENE LIGHTS

The cab shall include two (2) Whelen M9 LED scene lights, one (1) each side which shall be surface mounted. The Whelen lights shall provide directional lighting from twenty four (24) Super-LEDs and a clear gradient lens. The scene light shall have specialized TIR optics for ideal scene illumination.

SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right sides of the cab shall be mounted rearward of the cab "B" pillar in the 10.00 inch raised roof portion of the cab between the front and rear crew doors.

SIDE SCENE ACTIVATION

The scene lights shall be activated by two (2) rocker switches located in the switch panel, one (1) for each light.

GROUND LIGHTS

Each door shall include a Tecniq T44 LED ground light mounted to the underside of the cab step below each door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life.

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) 4.00 inch round LED NFPA compliant ground lights mounted under the bumper. The lights shall include a polycarbonate lens, a housing which is vibration welded, and LEDs which shall be shock mounted for extended life. The under bumper ground lighting shall activate 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.

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.

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 forward from the center of the front axle.

SIDE AND INTERSECTOR WARNING SWITCH

The side and intersector warning lights shall be controlled by a rocker switch on the switch panel. This switch shall be clearly labeled for identification.

TANK LEVEL LIGHTS

There shall be two (2) Whelen Strip-Light Plus XL tank lights surface mounted within a chrome bezel.

The light strips shall feature four (4) colors of LED lights to indicate the fluid level of a tank. The lights shall change in color to indicate the water level of the tank in ¼ tank increments, the colors shall change from green indicating a full tank to blue, amber, and red as the tank level drops.

TANK LEVEL LIGHTS ACTIVATION

The tank level lights shall be pre-wired and coiled at rear of the cab for connection to the apparatus by the body builder.

TANK LEVEL LIGHTS LOCATION

There shall be water level lights mounted on each side of the cab, behind the rear cab doors.

TRAFFIC CONTROL

There shall be one (1) GTT (Global Traffic Technologies) Opticom model 795H traffic control optical emitter mounted in the lightbar on the front of the cab roof. There shall be an indicator light on the dash. The emitter shall be activated by the master warn switch and shall be deactivated when the parking brake is applied.

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 the electric horn, the air horn, or the mechanical siren from the steering wheel horn button.

AUDIBLE WARNING LH FOOT SWITCH

A foot switch wired to actuate the mechanical siren(s) shall be supplied for installation in the front section of the cab for driver actuation.

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. Switch shall be disabled when parking brake is applied.

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

One (1) actuated switch shall be supplied for installation in the front section of the cab for officer actuation. One (1) switch shall be wired to actuate the mechanical siren.

MECHANICAL SIREN FOOT SWITCH RH

The mechanical siren foot switch shall be a Linemaster model 491-S. Switch shall be disabled when parking brake is applied.

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.

AIR HORN PRIMARY ACTIVATION

The air horn activation shall be accomplished by two (2) lanyard cables, one (1) on the left hand side accessible to the driver and one (1) on the right hand side accessible to the officer. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

MECHANICAL SIREN BRAKE/AUXILIARY ACTIVATION

Two (2) red momentary siren brake rocker switches shall be provided in the switch panel on the dash.

MECHANICAL SIREN INTERLOCK

The siren shall only be active when master warning switch is on to prevent accidental engagement.

BACK-UP ALARM

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of 107 dB. The alarm shall automatically activate when the transmission is placed in reverse.

INSTRUMENTATION

An ergonomically designed instrument panel shall be provided. Each gauge shall be backlit with LED lamps. Stepper motor movements shall drive all gauges. The instrumentation system shall be multiplexed and shall receive ABS, engine, and transmission information over the J1939 data bus to reduce redundant sensors and wiring.

A twenty eight (28) icon lightbar message center with integral LCD odometer/trip odometer shall be included. The odometer shall display up to 999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD message center screen shall be capable of custom configuration by the users for displaying certain vehicle status and diagnostic functions.

The instrument panel shall contain the following gauges:

One (1) three-movement gauge displaying vehicle speed, fuel level, and Diesel Exhaust Fluid (DEF) level. The primary scale on the speedometer shall read from 0 to 100 MPH, and the secondary scale on the speedometer shall read from 0 to 160 KM/H. The scale on the fuel and DEF level gauges shall read from empty to full as a fraction of full tank capacity. Red indicator lights in the gauge and an audible alarm shall indicate low fuel or low DEF at 1/8th tank level.

One (1) three-movement gauge displaying engine RPM, and primary and secondary air system pressures shall be included. The scale on the tachometer shall read from 0 to 3000 RPM. The scale on the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI) with a red line zone indicating critical levels of air pressure. Red indicator lights in the gauge and an audible alarm shall indicate low air pressure.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, voltmeter, and transmission temperature shall be included. The scale on the engine oil pressure gauge shall read from 0 to 100 pounds PSI with a red line zone indicating critical levels of oil pressure. A red indicator light in the gauge and audible alarm shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (°F) with a red line zone indicating critical coolant temperatures. A red indicator light in the gauge and audible alarm shall indicate high coolant temperature. The scale on the voltmeter shall read from 9 to 18 volts with a red line zone indicating critical levels of battery voltage. A red indicator light in the gauge and an audible alarm shall indicate high or low system voltage. The low voltage alarm

shall indicate when the system voltage has dropped below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The scale on the transmission temperature gauge shall read from 100 to 300 degrees °F with a red line zone indicating critical temperatures. A red indicator light in the gauge and an audible alarm shall indicate a high transmission temperature.

The light bar portion of the message center shall include twenty-eight (28) LED backlit indicators. The lightbar shall be split with fourteen (14) indicators on each side of the LCD message screen. The lightbar shall contain the following indicators and produce the following audible alarms when supplied in conjunction with applicable configurations:

RED INDICATORS

Stop Engine - indicates critical engine fault
Air Filter Restricted - indicates excessive engine air intake restriction
Park Brake - indicates parking brake is set
Seat Belt - indicates a seat is occupied and corresponding seat belt remains unfastened
Low Coolant - indicates critically low engine coolant
Cab Tilt Lock - indicates the cab tilt system locks are not engaged.

AMBER INDICATORS

Malfunction Indicator Lamp (MIL) - indicates an engine emission control system fault
Check Engine - indicates engine fault
Check Transmission - indicates transmission fault
Anti-Lock Brake System (ABS) - indicates anti-lock brake system fault
High exhaust system temperature – indicates elevated exhaust temperatures
Water in Fuel - indicates presence of water in fuel filter
Wait to Start - indicates active engine air preheat cycle
Windshield Washer Fluid – indicates washer fluid is low
DPF restriction - indicates a restriction of the diesel particulate filter
Regen Inhibit-indicates regeneration of the DPF has been inhibited by the operator
Range Inhibit - indicates a transmission operation is prevented and requested shift request may not occur.
SRS - indicates a problem in the supplemental restraint system
Check Message - indicates a vehicle status or diagnostic message on the LCD display requiring attention.

GREEN INDICATORS

Left and Right turn signal indicators
ATC - indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system
High Idle - indicates engine high idle is active.
Cruise Control - indicates cruise control is enabled
OK to Pump - indicates the pump is engaged and conditions have been met for pump operations

Pump Engaged - indicates the pump transmission is currently in pump gear

Auxiliary Brake - indicates secondary braking device is active

BLUE INDICATORS

High Beam indicator

AUDIBLE ALARMS

Air Filter Restriction

Cab Tilt Lock

Check Engine

Check Transmission

Open Door/Compartment

High Coolant Temperature

High or Low System Voltage

High Transmission Temperature

Low Air Pressure

Low Coolant Level

Low DEF Level

Low Engine Oil Pressure

Low Fuel

Seatbelt Indicator

Stop Engine

Water in Fuel

Extended Left/Right Turn Signal On

ABS System Fault

BACKLIGHTING COLOR

The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.

RADIO

A Jensen brand radio with weather band, AM/FM stereo receiver, rear RCA input pigtail connector, Bluetooth, satellite radio capability, and a covered front auxiliary mini stereo input with iPod ready front and rear USB inputs shall be installed in a customer specified location.

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.

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 auxiliary 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 shall be mounted on the right 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.

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 additional 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 right hand front corner of the upper 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.

CAB EXTERIOR PROTECTION

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

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.

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.

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 Spartan 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. The OEM engineer shall provide approval to the driveline engineer prior to driveline bills of materials being released.

CHASSIS MODIFICATIONS

ENGINE DOGHOUSE COVER

The engine enclosure (doghouse) will be covered with 1/2" black poly material to facilitate mounting of equipment.

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.

MUDFLAPS

Heavy-duty black rubber mudflaps shall be provided behind the front tires.

Black, anti-sail mudflaps shall be installed behind the rear wheels.

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.

CENTER BUMPER COMPARTMENT VINYL COVER

A red vinyl cover shall be provided across the top of the hose well in the front bumper. The cover shall be secured on the top with shock cord fasteners.

Meets NFPA 15.10.7 - 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.

HELMET HOLDERS

The required helmet holders will be supplied with the custom chassis.

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.

AMBIENT TEMPERATURE GAUGE

A gauge displaying the external ambient temperature shall be provided and mounted in a customer specified location in the cab.

Gauge Series: 10 Color Digital Series
Brand: GlowShift
Gauge Type: Ambient Air Temperature
Range of Reading: -40 - 200° F
Face Color: Black
Size: 52mm
Lens: Tinted
Backlighting Color: 10 Colors
Sending Unit: Electronic
Measurement Unit: Standard
Display: Digital

CAB STORAGE COMPARTMENT

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

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

One adjustable shelf shall be provided.

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

The compartment shall be constructed of aluminum, and will have a DA sanded finish.

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

COMPARTMENT LIGHT

Compartment shall have LED strip lighting installed on each side wall of the compartment. The lights shall be controlled by a switch.

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

RADIO MOUNTING

Two (2) customer-supplied, pre-programmed radios will be installed in the cab/pump panel. Two (2) speakers will be installed in both the front of the cab and two (2) speakers will be installed in the rear of the cab for said radios.

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

ANODE SYSTEM

Two (2) 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 #31.011.23 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 ¾" 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 in 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.

Three (3) additional push-to-prime remote primer controls shall be installed on the panel for the specified suction intakes. 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.

TRIDENT AUTO PRIME FRONT SUCTION PREP

The front suction pipe shall be equipped with the necessary plumbing to enable it to be primed independently of the pump and other suction inlets by the Trident air primer.

PUMP SHIFT - U.L. MANUAL

A manual pump shift that shall be located and operated at the left pump panel.

This handle will be clearly marked as such.

PUMP - WATEROUS CSUC20

1500 GPM SINGLE-STAGE MIDSHIP-MOUNTED CENTRIFUGAL 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

A. Pump

The pump shall be of single-stage construction, and shall comply with all applicable requirements of the latest standards for automotive fire apparatus of the *National Fire Protection Association, NFPA No. 1901*, and shall have a rated capacity of 1,500 GPM. The pump shall be free from objectionable pulsation and vibration under all normal operating conditions.

1. Pump Body

The pump body shall be close-grained gray iron, and must be horizontally split in two sections for easy removal of the entire impeller shaft assembly, and designed for complete servicing from the bottom of the truck, without disturbing setting of the pump in the chassis or apparatus piping which is connected to the pump. Pump body halves shall be bolted together on a single horizontal face to minimize leakage and facilitate reassembly.

2. Discharge Manifold

The discharge manifold shall be cast as an integral part of the pump body assembly, and shall provide at least three full 3-1/2 inch openings for ultimate flexibility in providing various discharge outlets for maximum efficiency, and shall be located as follows:

- One outlet on the right side of the pump body
- One outlet on the left side of the pump body
- One outlet directly on top of the pump discharge manifold

3. Impeller

The impeller shall be bronze with double suction inlets, accurately balanced (mechanically and hydraulically), labyrinth-type, wear rings that resist water bypass and loss of efficiency due to wear.

a. Flame Plating

The impeller shall have flame-plated hubs to assure maximum pump life and efficiency despite the presence of abrasive particles, such as fine sand, in the water being pumped.

4. Wear Rings

The wear rings shall be bronze, and shall be easily replaceable to restore original pump efficiency and eliminate the need for replacing the entire pump casing due to wear.

5. Impeller Shaft

The impeller shaft shall be stainless steel, accurately ground to size. The impeller shaft shall be of two-piece construction separable between the pump and pump transmission to allow true separation of the transmission from the pump without disassembly of either component.

6. Anti-Friction Bearings

The impeller shaft shall be supported at each end by oil or grease-lubricated anti-friction ball bearings for rigid and precise support. Bearings shall be protected from water and sediment by suitable seal housings, flinger rings, and oil seals. No sleeve type bearings shall be used.

7. Seal Housings

The seal housings shall be equipped with two-piece glands to permit adjustment or replacement of packing without disturbing pump. Lantern rings shall be located at inner ends of seal housings so that all rings of packing can be removed without removal of the

lantern rings. Water shall be fed into seal housing lantern rings for proper lubrication and cooling when the pump is operating.

8. Pump Transmission

The pump transmission shall be rigidly attached to the pump body assembly and be of latest design incorporating a high-strength, involute tooth form *Morse™ HV* chain drive, capable of operating at high speeds to provide smooth, quiet transfer of power. The shift engagement shall be accomplished by a free-sliding collar to maintain ROAD or PUMP position.

WATEROUS PUMP CONDITIONAL WARRANTY

Waterous Company warrants to the original buyer that products and parts manufactured by Waterous will be free from defects in material and workmanship, under normal use and service, for a period of seven (7) years from the date the product is first placed in service, or 7-1/2" years from the date of shipment by Waterous, whichever period shall be the first to expire.

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 section 16.13.6.4.

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 manufacturer's on-site testing facility, by Underwriters Laboratories.

The certification shall include at minimum:

- Pumping test - NFPA 16.13.2
- Pumping engine overload test – NFPA 16.13.3
- Pressure control system test - NFPA 16.13.4
- Priming system tests - NFPA 16.13.5
- Vacuum test - NFPA 16.13.6
- Water tank-to-pump flow test - NFPA 16.13.7

- If tire pump is driven by the chassis engine: engine speed advancement interlock test – NFPA 16.13.8
- Gauge and flowmeter test – NFPA 16.13.9
- Low voltage
- Line voltage

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.

Each inlet shall be equipped with a *Harrington H30E-40-60 NHLH* elbow, 6" F NST swivel x 4" Storz 30 degree adapter with *Harrington HBC-50* Storz blind cap and retainer chain.

FRONT SUCTION

Front suction piping shall be provided, that will terminate vertically through the top of the 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 5" electrically operated butterfly valve. The valve shall be controlled at the pump operator's panel.

The suction shall terminate with Trident 5" female NPT x 6" NST brass locking swivel with removable screen and long handled chrome plated cap.

WATEROUS INTAKE VALVE WITH RELIEF VALVE - ELECTRIC OPERATED

A Waterous *Monarch* intake valve shall be provided. Includes an extra short intake fitting, an intake butterfly valve, and an intake nipple with integral relief valve mounting pad, all designed to fit behind the pump panel. The intake valve shall feature a Jamesbury wafer-sphere high- performance butterfly valve. The *Monarch* valve shall be controlled with an electric actuator with control and indicator lights, located on operator's panel.

A Waterous intake relief valve shall be provided to make it less likely that "water hammer" will burst the supply line and allows the discharge relief valve or governor system to properly control discharge pressure. The Waterous intake relief valve system incorporates two separate units for ultimate flexibility in installation and operation: the pilot valve and the main valve. The pilot valve controls the operation of the main valve, and will be panel-mounted to be easily field adjusted for varying operating conditions, and will be preset at 125 PSI. It includes a removable strainer and removable needle valve for easy servicing. The main valve is a sliding-piston-type valve, mounted on the pump inlet, with its outlet terminating in a 2-1/2 inch victaulic connection, which will be piped to the appropriate location. The pilot valve control allows operation from closed to full open with very small pressure rise in the pump inlet.

The intake valve shall be installed on the left side intake.

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The intake valve shall be installed on the right side intake.

SUCTION - LEFT SIDE

One (1) 2-1/2" suction valve shall be installed on the left side of the unit. The 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. The valve shall be controlled at the pump panel.

SUCTION - RIGHT SIDE

One (1) 2-1/2" suction valve shall be installed on the right side of the unit. The 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. The valve shall be controlled at the pump panel.

TANK TO PUMP

There shall be two (2) 3" gated tank to pump lines piped to the pump, one from the front and one near the rear of the tank.

Piping from the sumps to the valves shall be 4" diameter.

The line shall be plumbed directly into the suctions of the pump for maximum efficiency.

A full-flow, inline ball valve, with check valve, shall be provided in each line to prevent accidental pressurization of the water tank through the pump connection.

Separate controls with function plates for each valve shall be located on the pump operator's 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 on the side of the truck below the reel

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.

CAPTIVE ROLLER ASSEMBLY

A captive roller assembly shall be provided and installed in place of the standard spool roller assembly for guiding the deployment and repacking of the booster hose.

DUNNAGE COMPARTMENT

The remaining area behind the crosslay(s) shall be used for additional storage space.

DUNNAGE COMPARTMENT

Each side of the dunnage compartment shall be enclosed with 12 gauge satin-finish stainless steel. Both sides should be lit.

HORIZONTAL SPEEDLAYS

The speedlays shall be fabricated of 12 gauge stainless steel, with stainless steel swirl finish side panels and floors. Floors shall be lined with poly-plas matting.

Two (2) speedlays shall be provided under the operator's panel, divided as follows:

- Top section: Capable of holding 200 ft. of 1.75" hose. Piping and valve to be 2" with 1.5"swivel.
- Bottom section: Capable of holding 200 ft. of 1.75" hose. Piping and valve to be 2" with 1.5" swivel.

The horizontal speedlays shall be designed as an integral part of the pump house design, and shall be located directly forward of the pump installation for quick attack deployment.

Vertical and horizontal stainless steel rollers with nylon guides shall be installed on each side of the speedlays.

Hose connections should be at the bottom of the speedlays

A 12 gauge stainless steel vertical retainer will be installed at the front of each speedlay, to secure the hose but allow for easy repacking.

Control handles shall be provided on the pump operator's panel.

SPEEDLAY VINYL FLAPS

Each end of the speedlay bins shall have black vinyl flaps installed, to retain the hose load. The flaps shall be secured with 2" wide straps with velcro fasteners.

Meets NFPA 15.10.5 - 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.

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.

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.

DISCHARGE - 2.5" RIGHT SIDE

One (1) 2.5" 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 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 - 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.

DECK GUN PACKAGE - TFT CROSSFIRE

A *Crossfire Safe-Tak 1250* deck gun package XFC-62 shall be provided.

Includes:

- Model XFT-NJ monitor top
- Stream straightner
- Quad stack tips
- Choice of *TFT M-R* nozzle
- 18" *Extend-A-Gun*
- Ground base with mounting bracket

This deck gun shall be painted with the apparatus accessories.

REDUCERS

Three (3) Akron style 337 chrome reducers, 2.5" NST female to 1.5" NST male adapter, with 1.5" cap and chain, shall be provided.

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 be 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

Two (2) 125 GPM bypass eductors (Akron Style #3125) shall be provided one each side pump panel for external foam application use, with onboard foam. 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.

TOP CONSOLE MOUNTED OPERATOR'S PANEL

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 using high-grade U-bolts.

The pump, and all of the pump mounted valves, shall be completely enclosed by the pump house design.

Left and right side pump house panels shall consist of double upper, vertically-hinged pump access doors. The doors will be swing-open style with quick-opening door latches.

The lower left and right side panels shall contain the specified side discharges, inlets, and line bleeders.

The side panels shall be fastened to the pump house with stainless steel bolts and shall be completely removable.

All panels shall be brush-finished, 12-gauge, 304 stainless steel.

The top of the pump house shall consist of a panel containing all required gauges and controls.

All valve controls, unless otherwise stated, shall be mounted in a single line across the lower portion of the control panel. The apparatus pump panel shall be equipped with *Innovative Controls* top mount valve controls. The ergonomically designed T-handle shall be polished stainless steel with recessed labels for color-coding and verbiage. The patented auto-locking control rod and gear housing shall be polished stainless steel and shall provide a true positive lock that will eliminate valve drift. Brass and Teflon-impregnated bushings shall minimize rod deflection, never need lubrication, and ensure consistent long-term operation.

WALKWAY

A 20" wide walkway shall be provided between the cab and the operator's panel, with proper cab clearance.

And intermediate step shall be provided on each side, between the running board steps and the walkway, to allow easy access to the walkway. A maximized compartment shall be installed in between the step and the intermediate step.

Walkway shall be fabricated of stainless steel channel and tubing. The walkway shall be covered with aluminum diamond plate.

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.

TOP CONSOLE OPERATORS PANEL

The following items shall be located on the top console 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
- Two (2) UL test connections
- One (1) master pump house lighting switch
- One (1) engine governor control
- Four (4) primer controls
- All discharge controls
- One (1) tank fill/pump bypass control
- One (1) tank to pump valve control
- One (1) pump ENGAGED indicator light
- One liquid level meter with sensor in the water tank

The following items will be located on the left hand pump panel:

- One pump certification plate

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 1.50" stainless steel grating. Grated area will allow debris to fall to the ground and not collect on top of the step. The outer edges will be trimmed with #4 finish stainless steel diamond plate.

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 1901.

TOP MOUNT PUMP PANEL LIGHTING

The top-mount pump panel shall be illuminated by seven (7) 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) top-mount 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.

RIGHT SIDE 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.

LEFT SIDE PANEL LIGHTING

The left 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" BACKLIT IC MASTER GAUGES

The master intake and master discharge gauges shall be 4" diameter Innovative Controls *Nite-Glo* pressure gauges. Each gauge shall have a one-piece, die-cast, brass 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, chrome-plated, brass 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 marking on a white dial, and be internally illuminated with white lights.

The gauge on the right shall be the master pump discharge gauge and shall display a range from 0 to 400 psi, with black markings on a white dial, and be internally illuminated with white lights.

Both gauges shall be for a 12 volt system with two 22 ga. 3 ft. wire leads.

2-1/2" INNOVATIVE CONTROLS BACKLIT GAUGES

The valve discharge gauges shall be 2½" diameter Innovative Controls *Nite-Glo* pressure gauges. Each gauge shall have a one-piece, die-cast, brass 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 A 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, chrome-plated, brass bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be for a 12 volt system with two 22ga. 3ft. wire leads and have a display range from 0 to 400 psi. Each gauge will have black markings on a white dial.

Nine (9) gauges shall have a blue dial marking indicating water capable discharge and be illuminated with white or blue lights.

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 $\frac{3}{4}$ 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.

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 $\frac{1}{4}$ 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.

WHELEN TANK LEVEL LIGHT

There shall be one (1) Whelen Strip-Light Plus XL tank light, surface-mounted within a chrome bezel. The light will be mounted vertically on the rear of the body.

The light strip shall feature four (4) colors of LED lights, to indicate the fluid level of a tank. The lights shall change in color to indicate the water level of the tank, in $\frac{1}{4}$ tank increments. The colors shall change from green, indicating a full tank, to blue, amber, and red as the tank level drops.

MICROPHONE COMPARTMENT

2 compartment(s) shall be installed on the pump panel and should be sized for 2 control heads and microphones each, with two (2) control heads included, with three (3) marine grade speakers flush mount to pump panel.

AIR HORN BUTTON ON PANEL

An air horn button shall be installed on the pump operator's panel.

This button will allow pump operator to activate air horns at any point in time. The button will be a waterproof, momentary-contact switch, included in the pump panel light switch bezel. The button shall be red in color, and shall be clearly marked, to distinguish it from other pump panel elements.

2-1/2" REAR DIRECT TANK FILL

One (1) 2.5" Akron Brass style 8825 valve provided. The fill shall terminate with a 2.50" 30- degree chrome elbow with chrome plug and retainer chain. A 3/4" bleeder will be installed.

The valve will be installed on the rear of the tank, in a customer specified location.

WATER AND FOAM TANK

The UPF poly water tank shall be constructed of PT3™ polypropylene material. This material shall be a non-corrosive, stress-relieving 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.

30 GALLON FOAM CELL

A 30 gallon Class "A" foam cell shall be designed integral to the water tank. The foam cell shall have a separate fill tower that is a different color than the water tank fill tower. The tank shall be configured with appropriate inlets and outlets for the specified foam application.

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. The tank construction shall include PolyProSeal™ technology, wherein a 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" PT3™ 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 1901. The walls shall be welded to the floor of the tank, providing maximum strength as part of the tank's unique Full Floor Design™. 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® III is delivered with a Certificate of Capacity, delineating the weight empty and full, and the resultant capacity based on weight.

TANKNOLOGY™ TAG

A tag shall be installed on the apparatus, in a convenient location, which shall contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include:

- The capacity of the water and foam(s)
- The maximum fill and pressure rates
- The serial number of the tank
- The date of manufacture
- The tank manufacturer and contact information

The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

TANK LID

The tank cover shall be constructed of 1/2" thick PT3™ 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" PT3™ polypropylene and shall be a minimum dimension of 12" x 12" outer perimeter. The fill tower shall be blue in color, 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 PT3 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 4" 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 1901, so as to not interfere with rear tire traction.

TANK SUMP

There shall be two tank sumps per tank. The sumps shall be constructed of a minimum of 1/2" PT3™ 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 4" 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 three (3) standard tank outlets:

- Two (2) for the tank-to-pump suction lines, which shall be a minimum of 4" coupling and
- One (1) for a tank fill line, which shall be a minimum of a 2.5" 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.

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.

Interiors of compartments are to be left natural stainless steel with a swirl finish applied to give a lasting and pleasing appearance.

COMPARTMENT SUPPORTS

Compartment floor supports 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.

STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body shall meet NFPA 1901 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 - ROLL UP DOORS

LEFT SIDE COMPARTMENTS WITH RESCUE-STYLE HIGH SIDE

L1: 67.00" High x 13.00/28.00" Deep x 40.00" Wide
Door Opening: 56.00" High x 34.00" Wide

L2: 36.00" High x 13.00" Deep x 64.00" Wide
Door Opening: 25.00" High x 56.50" Wide

L3: 67.00" High x 13.00/28.00" Deep x 48.00" Wide
Door Opening: 56.00" High x 42.00" Wide

REAR COMPARTMENT

RR: 55.50" High x 26.00" Deep x 42.00" Wide
Door Opening: 44.00" High x 39.50" Wide

RIGHT SIDE COMPARTMENTS WITH RESCUE-STYLE LOCKER

R1: 56.00" High x 13.00/28.00" Deep x 40.00" Wide
Door Opening: 45.00" High x 34.00" Wide

R2: 25.00" High x 13.00" Deep x 64.00" Wide
Door Opening: 21.50" High x 59.00" Wide
This compartment shall have a hinged door, at top.

R3: 56.00" High x 13.00/28.00" Deep x 48.00" Wide
Door Opening: 45.00" High x 42.00" 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.

PHOENIX NOTCH

All compartment floors shall have a "Phoenix notch" to provide a true sweep-out compartment. The leading edge of the compartment floor shall have a 1" recess below the compartment floor to allow the rollup door to close below the compartment floor level.

No Exceptions.

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 constructed of 1.50" stainless steel grating. The grated area will allow debris to fall to the ground and not collect on top of the step. The outer edges will be trimmed with #4 grain-finish stainless steel tread plate. The bumper stepping surface will comply with the latest version of NFPA 1901.

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.

PUMP HOUSE TRIM

The front of the pump house shall be covered with aluminum diamond plate.

RUB RAILS

Onscene Solutions extruded aluminum C-channel rub rails shall be provided on each side, below the lower side compartments. The rub rails shall be bolted in place, with a spacer between the body and the rub rail. The rub rails shall allow for warning lights to be recess mounted in the rub rail (if specified.)

A separate cut-off switch shall be provided to control the white lights.

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, model T-3500, 1" "T" bars with 35% open area. This will allow for proper ventilation and drainage of hose.

HOSE BED DIVIDERS

Three (3) 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 DIVIDER HAND HOLDS

A hand-hold-cut-out shall be provided along the vertical rear edge of each divider.

HOSE BED CAPACITY

The hose bed shall be capable of holding the following hose (listed left-to-right):

1500 Feet of 4.00" LDH hose
400 Feet of 2.50" DJ hose

HOSE BED COVER

A flat, two-piece cover shall be installed over the main hose bed. The cover shall be constructed of aluminum diamond plate and shall be reinforced to support the weight of personnel walking on the cover.

A stainless steel bulkhead will be installed in the front of the hose bed to support the cover.

The cover shall be hinged on each side of the hose bed, with full-length, 3/8" stainless steel piano hinges.

Electric operated power cylinders shall be provided on each side at the front of the cover to automatically open the lid.

A lighted control switch shall be located at the rear of the body and be properly labeled.

Two (2) LED lights shall be provided under each cover and shall be automatically activated by setting the park brakes.

RED vinyl flaps shall be provided on the rear, to retain the hose load.

HAND RAILS

Access hand rails shall be 1-1/4" in diameter knurled aluminum tubing. 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.

The grab rails shall include clear 12 volt RED LED lights to provide an increased margin of safety. The lights shall only be activated when the parking brake is set and the marker lights are on.

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 hosebed.

FIXED ACCESS STEP

A fixed step will be installed above the rear compartment to assist in hose bed access.

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.

PULL-OUT ACCESS STEP

One (1) *Zico* model PS-8-5 pull-out step will be provided and installed under the rear bumper.

Exact location to be determined at the pre-paint inspection.

SUCTION HOSE MOUNTING BRACKETS

One (1) aluminum V-Tray shall be provided and mounted on stainless steel unistrut tracking, located on the left side of the apparatus, over the compartments. Painted body color.

The hose shall be held in place with quick release holders.

SUCTION HOSE COMPARTMENTS

A compartment will be located on the right side of the booster tank under the hose bed.

Compartment shall be fabricated of 1/2" polypropylene and shall be designed to allow easy removal and storage of all specified equipment. All equipment shall be separated by dividers or tubes.

The compartment will be designed to hold two (2) 6" x 10' suction hoses, 10' attic ladder, and two (2) pike poles. LED lighting shall be provided in the compartments.

SUCTION COMPARTMENT DOOR

Compartment will have a single, vertically hinged, aluminum door painted to body color with a D-ring latching handle. Door(s) shall be wired to the door ajar circuit.

ZICO QUIC-LIFT LADDER BRACKET

A Zico model LAS *Quic-Lift* vertical ladder bracket will be provided and installed on the right side of the unit, over the upper compartments.

Ladder mounting brackets will be designed to accommodate the roof ladder, nested externally of the extension ladder, on aluminum brackets.

Ladders shall automatically be lowered to a convenient height for safe and easy retrieval of the ladders.

The system is comprised of two (2) high-strength aluminum castings with Warner 12 volt linear actuators.

Control switch shall be mounted in the right side pump panel within view of the ladders.

Flashing warning lights are provided on each end of the bracket. An audible alarm shall also be provided. Lights and beeper are activated when ladder bracket is in motion. Also the warning system will be wired to the hazard warning light in the cab.

The outward ends of the rack that protrude beyond the body of the apparatus shall have reflective material to indicate a hazard or an obstruction.

AIR BOTTLE STORAGE COMPARTMENT (DOUBLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided in the front portion of the driver side rear wheel well area. The compartment will be capable of holding two (2) Scott 45 min spare air bottles. 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.

AIR BOTTLE STORAGE COMPARTMENT (SINGLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided in the rear portion of the driver side rear wheel well area. 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.

AIR BOTTLE STORAGE COMPARTMENT (DOUBLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided in the front portion of the officer side rear wheel well area. The compartment will be capable of holding 1 60 minute Scott RIT bottle. 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.

AIR BOTTLE STORAGE COMPARTMENT (DOUBLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided in the rear portion of the officer side rear wheel well area. The compartment will be capable of holding two (2) spare air bottles. 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, where specified, will have vertically hinged, painted, stainless steel 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 six (6) adjustable shelves shall be provided and installed in a 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.

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: (4)

Location:

TRAYS - PULL OUT

Three (3) Accuride slide out trays shall be provided and installed in a customer-specified location.

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:

VERTICAL SWING-OUT TOOL BOARD

One (1) vertically mounted swing-out tool board shall be provided and installed in the full-depth compartment over the rear wheels.

The tool board shall be fabricated of 3/16" pegboard aluminum sheeting with full-length stainless steel hinge. The board shall be mounted midway in the compartment and shall swing open to allow for mounting of equipment to either side of the board to allow for maximum use of the compartment space.

The tool board will have a manual Southco #E3-11-012 all-stainless-steel twist-lock latch.

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.

ROLL-UP DOOR

The rear compartment door shall be a R•O•M Series IV roll-up shutter door with painted finish. Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

Shutter slats will feature a double-wall extrusion, 0.315" thick, with a concave interior surface to minimize the possibility of loose equipment jamming the shutter door closed. Shutter slats will feature an interlocking end shoe to prevent side-to-side binding of the shutter door during operation. Slat must have interlocking joints with an inverted locking flange. Slat inner seal shall be a one-piece PVC extrusion; seal design will be such to prevent metal-to-metal contact while minimizing dirt and water from entering the compartment.

Shutter door track shall be one-piece design with integral overlapping flange to provide a clean, finished look without the need of caulk. Door track shall feature an extruded Santoprene rubber, double-lip, low-profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

Shutter bottom rail shall be a one-piece, double-wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear, striated surface to improve operator grip while operating the shutter door. Bottom rail shall have a smooth, contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene; it will be a double-V seal to prevent water and debris from entering compartment. Bottom rail lift bar shall be a one-piece, D-shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125". Lift bar shall be supported by no less than two (2) pivot blocks; pivot blocks shall be constructed from Type 66, glass-filled, reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door shall have an enclosed counterbalance system. Counter-balance system shall be 4" in diameter and shall be held in place by two (2) heavy-duty 18 gauge zinc-plated plates. The counter-balance system shall have two (2) over-molded rubber guide wheels to provide a smooth transition from vertical track to counterbalance system; no foam material of any kind shall be permitted or used in this area.

Magnetic door-ajar switches shall be provided and installed within the shutter door strike block. Strike block will be mounted to the door track, outside of the compartment. Door switch will be controlled by a magnetic end cap installed into the shutter lift bar. Door switch will provide a ground signal to a relay or multiplexing device to control compartment lighting and/or warn operator that door is open.

The shutter door assembly shall be manufactured and assembled in the United States, no exceptions.

ROLL-UP DOOR

All compartment doors (except L2 and R2 which shall be horizontally hinged, standard doors) shall be R•O•M Series IV roll-up shutter doors with painted finish. Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

Shutter slats will feature a double-wall extrusion, 0.315" thick, with a concave interior surface to minimize the possibility of loose equipment jamming the shutter door closed. Shutter slats will feature an interlocking end shoe to prevent side-to-side binding of the shutter door during operation. Slat must have interlocking joints with an inverted locking flange. Slat inner seal shall be a one piece PVC extrusion; seal design will be such to prevent metal-to-metal contact while minimizing dirt and water from entering the compartment.

Shutter door track shall be one-piece design with integral overlapping flange to provide a clean, finished look without the need of caulk. Door track shall feature an extruded Santoprene rubber, double-lip, low-profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

Shutter bottom rail shall be a one-piece, double-wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear, striated surface to improve operator grip while operating the shutter door. Bottom rail shall have a smooth, contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene; it will be a double-V seal to prevent water and debris from entering compartment. Bottom rail lift bar shall be a one-piece, D-shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125". Lift bar shall be supported by no less than two (2) pivot blocks; pivot blocks shall be constructed from Type 66, glass-filled, reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door shall have an enclosed counterbalance system. Counterbalance system shall be 4" in diameter and shall be held in place by two (2) heavy-duty, 18 gauge zinc plated plates. Counter- balance system shall have two (2) over-molded rubber guide wheels to provide a smooth transition from vertical track to counterbalance system; no foam material of any kind shall be permitted or used in this area.

Magnetic door ajar switches shall be provided and installed within the shutter door strike block. Strike block will be mounted to the door track, outside of the compartment. Door switch will be controlled by a magnetic end cap installed into the shutter lift bar. Door switch will provide a ground signal to a relay or multiplexing device to control compartment lighting and/or warn operator that door is open.

The shutter door assembly shall be manufactured and assembled in the United States, no exceptions.

DOOR TRIM

The trim around the roll-up doors shall be painted to match the color of the door.

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

Compartment L2 and R2 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 1901, (2016 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, a Trucklite model 60072Y 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 3SCODCR 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 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 to be properly identified and mounted in a removable panel for ease in 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 ECVCLLED21, 21" LED compartment lighting shall be provided in compartment R2. The lighting shall be mounted behind the door jamb on each side 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.

R.O.M COMPARTMENT LIGHTING

Full height R.O.M. LED compartment lighting shall be provided to provide full illumination of the compartment. The lighting shall be mounted behind the door track on both sides of the compartment.

Compartment lighting shall activate automatically 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. 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" LED lights mounted in a stainless steel bracket shall be utilized.

Two (2) lights mounted under the rear step.

One (1) light located 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 3SCODCR 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 C - UPPER

Two (2) model L31HRFN Super Red LED 360 beacon lights mounted on the upper rear light stanchions.

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 manufacture.

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 TADCTL1 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.

WHELEN PIONEER 15 DEGREE RECESSED MOUNTED SCENE LIGHT

Whelen Pioneer Model # MPR15W shall be provided.

Four (4) lights shall be provided and mounted:

One (1) located each side of the body at the rear.

Two (2) shall be mounted on the rear face of the unit and will illuminate when the truck is placed in reverse gear.

The lights will be controlled by switches located in the cab and be labeled.

Final location will be decided upon at pre-paint.

LED TELESCOPIC FLOODLIGHT

Fire Research Evolution II LED model FCA530-V20 side mount push up telescopic light shall be installed. The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. The outer pole shall be a grooved aluminum extrusion and qualify as an NFPA compliant handrail. The pole mounting brackets shall have a 3 1/2" offset. Wiring shall extend from the pole bottom with a 4' retractile cord.

The lamp head shall have eight (8) ultra-bright white LEDs. It shall operate at 12/24 volts DC, draw 13/6.5 amps, and generate 20,000 lumens. The lamp head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamp head shall incorporate heat-dissipating fins and be no more than 5 3/16" deep by 3 5/16" high by 11 1/2" wide. The lamp head and mounting arm shall be powder coated white. The floodlight shall be for fire service use.

A control switch for each light will be located at the pump panel.

Two (2) lights will be provided.

Location of floodlight shall be:

OUTLETS

Two (2) 120 volt 20 amp with weatherproof cover shall be provided with wiring to the shoreline.

Location shall be: RR Compartment

Two (2) 120 volt 20 amp with installed over doghouse for radio chargers

PAINT, LETTERING, AND GRAPHICS

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 color of the cab. The cab shall remain as painted from the chassis supplier.

Paint Color _____ - Paint # _____

LETTERING

Lettering shall be provided. It shall be computer generated, non-reflective, imitation gold leaf vinyl 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.

GOLD REFLECTIVE 24.00" LETTERS

24.00" computer generated, White Reflective letters with a black border shall be provided.

Three characters will be applied to the cab roof. "E-1"

REFLECTIVE STRIPING

A 1/2" - 10" - 1/2" " wide white reflective stripe shall be applied to the unit in a straight line.

Per NFPA 15.9.3.1 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.

REFLECTIVE CHEVRON - NFPA 15.9.3.2

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.

The same configuration will be placed on the front bumper.

Stripe Colors will be diamond grade Red & Fluorescent Yellow.

EQUIPMENT

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 1901 for each apparatus classification which is not specified in this proposal will be considered to be customer supplied.

OPTICOM SYSTEM - An Opticom Traffic light system shall be installed.

TRAFFIC ADVISOR – A traffic advisor light bar shall be installed.

SUCTION HOSE

Three (3) Harrington 6" x 10' light weight PVC suction hose with male and 6" long handled female couplers.

10' FOLDING LADDER

One (1) Alco-Lite model #FL-10, 10' folding ladder shall be provided. Ladder shall consist of 1-section aluminum ladder with rubber feet and shall meet or exceed the latest NFPA standards.

14' ROOF LADDER

One (1) Alco-Lite model #PRL-14, 14' roof ladder shall be provided. Ladder shall consist of a single section aluminum ladder with folding steel hooks on one end and steel spikes on the other end. Ladder shall meet or exceed the latest NFPA standards.

24' EXTENSION LADDER

One (1) Alco-Lite #PEL-24, 24' extension ladder. Ladder shall consist of 2 aluminum sections. Ladder shall meet or exceed the latest NFPA standards.

WHEEL CHOCKS

Two (2) Zico AC32 wheel chocks will be provided and mounted under the left front compartment.

HAND LIGHTS

Four (4) *Steamlight Vulcan 180* hand-held LED lights with 12 volt charger will be provided and mounted in customer specified location.

- Features a 180° articulating head that aims the beam where you need it; head locks in-place in forward facing position
- Light Output:
 - High for a bright, far-reaching beam: 1,200 lumens; 548m beam; runs 5.75 hours
 - Low for a less intense beam and longer run time: 350 lumens; 296m beam; runs 16 hours
- Three LEDs produce a tight beam with optimum peripheral illumination
- Two ultra-bright blue taillight LEDs make certain you can be seen even in thick smoke; can be programmed on/off or flashing
- Optimized electronics provide regulated intensity
- Large, multi-function, push-button switch easy to use with gloved hands
- Rechargeable lithium Ion battery. Fully recharges in 9 hours with battery status indicator
- High impact, super-tough nylon construction; rotating head constructed from high grade aluminum encased in super-tough nylon; reinforced D-Rings
- Rubberized cushioned-grip handle designed for easy hand off
- IP64 rated - dust-tight and water-resistant; 2m impact resistance tested
- Flat base area allows light to stand on its own for scene lighting
- Quick install charge rack fits same foot print as LiteBox® and Vulcan® series
- Available in international safety orange or yellow
- Vehicle Mount with 12V DC direct wire rack and quick release shoulder strap
- 7.43 in. (18.8 cm); 2.47 lbs. (1123 grams)
- Serialized for positive identification
- Assembled in USA

AIR PACK BRACKET

One (1) Ziamatic model ULLH air pack bracket shall be supplied and mounted in the SCBA seat in the cab. Bracket consists of backplate, short footplate, two non-mar double-coated seats and new "Load & Lock" adjustable strap assembly. The backplate and footplate are black thermoplastic coated for years of trouble-free service. Hi-cycle double coated clips will not mar cylinders. Strap assembly meets NFPA 1901-03 standard for SCBA retention and is easily adjusted.

To be mounted on the rear cab wall, driver's side.

SPANNER WRENCH SET W/HYDRANT WRENCH

One (1) set of Kochek style K45-3Y spanner wrenches shall be provided and mounted in customer specified location. Includes (1) Hydrant wrench and (2) spanner wrenches with mounting bracket.

Location:

SPANNER WRENCH SET

Two (2) sets of Kochek style K46-2Y spanner wrenches shall be provided and mounted in customer specified location. Includes (2) spanner wrenches with mounting bracket.

Location:

SPANNER WRENCH - LDH

Two (2) sets of Kochek style KS34-KBR - Set of four (4) storz wrenches w/holder will be provided and mounted in customer specified location.

Location:

SAFETY FIRE VEST

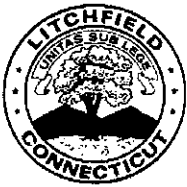
The NFPA required Safety Vest will be supplied and installed by the purchaser before the truck is placed into service.

TRAFFIC CONES

The NFPA required traffic cones will be supplied and installed by the purchaser before the truck is place 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.



Department of Public Works

Bid Schedule

Northfield Volunteer Fire Company Fire Engine

Litchfield, Connecticut

Bid Amount: \$ _____

Written: _____

Date of Delivery: _____

Bid Amount – Option #1 : \$ _____

Written: _____

Date of Delivery: _____

The undersigned is familiar with the conditions surrounding this call for bids, is aware that the Town reserves the right to reject any and all bids, and is submitting this bid without collusion with any other person, individual, or corporation.

Signed: _____

Print Name: _____

Title: _____

Company: _____

Address: _____

Subscribed and sworn to before me on
this _____ day of _____, 20__.

Notary Public



TOWN OF LITCHFIELD

NONDISCRIMINATION CERTIFICATION

Representation by Individual

Written representation that complies with the nondiscrimination agreements and warranties under the Connecticut General Statutes ss/ss 4a-60(a)(1) and 4a-60a(a)(1) as amended.

Instructions:

For use by an individual who is not an entity (corporation, limited liability company, or partnership) when entering into any contract type with the Town of Litchfield, regardless of contract value. Submit to the awarding agency prior to contract execution.

Representation of an Individual:

I, _____, of _____,
Signatory Business Address

Represent that I will comply with the nondiscrimination agreements and warranties of Connecticut General Statutes ss/ss 4a-60(a)(1) and 4a-60 (a) (1) as amended.

Signatory

Date

Printed Name



TOWN OF LITCHFIELD

NONDISCRIMINATION CERTIFICATION

Representation by Entity

Written representation that complies with the nondiscrimination agreements and warranties under the Connecticut General Statutes ss/ss 4a-60(a)(1) and 4a-60a(a)(1) as amended.

Instructions:

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the Town of Litchfield, regardless of contract value. Submit to the awarding agency prior to contract execution.

Representation of an Entity:

I, _____, _____, of _____,
Authorized Signatory Title Name of Entity

An entity duly formed and existing under the laws of _____,
Name State of Commonwealth

Represent that I am authorized to execute and deliver this representation on behalf of

_____ and that _____ has a
Name of Entity Name of Entity

Policy in place that complies with the nondiscrimination agreements and warranties of Connecticut General Statutes ss/ss 4a-60(a)(1) and 4a-60 (a) (1) as amended.

Authorized Signatory

_____ Date

Printed Name



NON-COLLUSION AFFIDAVIT

(This affidavit must be signed and sworn to by the person signing bid)

AFFIDAVIT FOR INDIVIDUAL BIDDER

STATE OF _____

COUNTRY OF _____

_____ Being first duly sworn, deposes and says:
(Persons Name)

That they are the person who is the Bidder submitting the accompanying bid for Town Project, and that they, having read, understood, and agreed to all the terms and provisions thereof, signed this affidavit; and the accompanying bid; and that such bid is genuine and not a sham or collusive or made in the interest or on behalf of any person not therein named; and that said Bidder has not directly or indirectly, induced or solicited any other Bidder to put in a sham bid, or any other person, firm or corporation to refrain from bidding and that said Bidder has not in any manner sought by collusion to secure said Bidder any advantage over any other Bidder; and that said Bidder has not otherwise taken any action in restraint of free competitive bidding in connection with the subject bid.

Signed and sworn to before me this _____ day of _____, 20____

_____ My Commission expires _____
Notary Public
(Seal)

(Signature of named individual)



NON-COLLUSION AFFIDAVIT

(This affidavit must be signed and sworn to by the person signing bid)

AFFIDAVIT FOR CO-PARTNERSHIP BIDDER

STATE OF _____

COUNTRY OF _____

(Persons Names)

Each being first duly sworn, each deposes and each for themselves says: That they are a member of and that the persons listed above collectively compose the co-partnership firm designated as

(Firm Name) who is the Bidder submitting the

accompanying bid for Town Project, and that they, being duly authorized, signed this affidavit on behalf of said Bidder; and that such bid is genuine and not a sham or collusive or made in the interest or on behalf of any person not therein named; and that said Bidder has not directly or indirectly, induced or solicited any other Bidder to put in a sham bid, or any other person, firm or corporation to refrain from bidding and that said Bidder has not in any manner sought by collusion to secure said Bidder any advantage over any other Bidder; and that said Bidder has not otherwise taken any action in restraint of free competitive bidding in connection with the subject bid.

Signed and sworn to before me this _____ day of _____, 20__

Notary Public My Commission expires _____

(Seal)

Signatures of Named Principals:



NON-COLLUSION AFFIDAVIT

(This affidavit must be signed and sworn to by the person signing bid)

AFFIDAVIT FOR CORPORATION BIDDER

STATE OF _____

COUNTRY OF _____

_____ Being first duly sworn, deposes and says:
(Persons Name)

That they are the _____ of the
corporation who

(Official Title of Cooperate Officer or Agent)

Is the Bidder submitting the accompanying bid for Town Project, and that they, being duly authorized, signed this affidavit on behalf of said Bidder; and that such bid is genuine and not a sham or collusive or made in the interest or on behalf of any person not therein named; and that said Bidder has not directly or indirectly, induced or solicited any other Bidder to put in a sham bid, or any other person, firm or corporation to refrain from bidding and that said Bidder has not in any manner sought by collusion to secure said Bidder any advantage over any other Bidder; and that said Bidder has not otherwise taken any action in restraint of free competitive bidding in connection with the subject bid.

Signed and sworn to before me this _____ day of _____, 20__

_____ My Commission
expires _____
Notary Public
(Seal)

(Signature of Cooperate Officer or Agent)

