ADVERTISEMENT FOR BIDS

Notice is hereby given that sealed bids for **One (1) Pumper Fire Apparatus** will be received at the office of **Ms. Liz Melock, Village Administrator, 5 West Main Street, Springville, NY 14141** until **11 am. on April. 24, 2020**, at which place and time said bids will be opened publicly and read aloud. Bids must be received in **duplicate** in a sealed opaque envelope marked **"Springville Pumper Fire Apparatus"** on the outside.

The contract documents may be downloaded from the Village web site at www.villageofspringvilleny.com or via email by calling the village office at 716-592-4936 x1000. Bids are to be submitted only on the forms provided in the Bid Package.

All bids shall be accompanied by a bid bond payable to Village of Springville in the amount not less than five percent of the total bid. Bid forms must not be separated from the Bid Package and the bound document must be submitted intact. A performance bond in the full amount of the bid will be required. The successful bidder must furnish performance bond and insurance certificates within thirty (30) calendar days of the award. The Bidder shall guarantee the total bid price for sixty (60) days from the opening of the Bid.

Bids shall be prepared, considered and the contract awarded in accordance with all statutes governing such contracts. Every bid shall be on forms furnished by the Owner. Bids submitted on other forms shall be rejected.

The Village of Springville specifically reserves the right to reject any or all bids, waive irregularities or informalities or to accept any bid which they deem to be in the best interest of the Village of Springville, New York. This institution is an equal opportunity provider and employer.

BY: Ms. Liz Melock
Administrator

Springville Journal

Village of Springville
Village Clerk's Office
5 West Main Street
Springville, New York 14141
(716) 592-4936 ext. 1467
Fax: 716-592-7088
lmelock@villageofspringvilleny.com

Springville Fire Department

Village of Springville
New York

General Instructions
FOR:

One (1) Pumper
Fire Apparatus

Bid opening is on April 27th at 11 am at the Village of Springville Village Offices located at 5 W. Main St Springville NY 14141. Mailing address for USPS is Village of Springville PO Box 17 Springville NY 14141. Please use the Physical address of 5 W. Main St Springville NY 14141 for UPS, FedEx or in person drop off before April 27th at 11 am.

Questions regarding the bid should be addressed to Fire Chief Marc Gentner via email at sfdchief@roadrunner.com or leave a message on his cell phone at 716-807-2119. Physical address for delivery of the fire apparatus is 405 W. Main St Springville NY 14141.

Bid packets must be submitted in duplicate in a sealed envelope marked "Springville Pumper Fire Apparatus".
Bid bonds must accompany the bid packet along with the completed bid form, non-collusion statement and completed bid specifications pages 1-160. The bidder shall guarantee the total bid price for sixty (60) days from the opening of the bid.

Please review enclosed copy of the advertisement for bids for additional information.

Thank you.

Liz Melock
Village Administrator
716-592-4936 x1467
lmelock@villageofspringvilleny.com

Village of Springville Bid Form

Springville Pumper Fire Apparatus

MUST BE SUBMITED WITH PROPOSAL

In accordance with the specifications, the undersigned hereby submits the following bid:

Price of One (1) Pumper Fire Apparatus $_____

In words _____

_____

_____

Submitted for (Company Name)

Address: _____

_____

_____

Telephone: _____

Email: _____

_____ _____

Submitted by: Date:

_____ _____

Name (print): Title:

Statement of Non-Collusion in Bids or Proposals [General Municipal Law §103-d]

By submission of this bid, each Bidder/Proposer and each person signing on behalf of any Bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of their knowledge and belief:

1. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other Bidder/Proposer or with any competitor;

2. Unless otherwise required by law, the prices which have been quoted in the bid have not been knowingly disclosed by the Bidder/Proposer and will not knowingly be disclosed by the Bidder/Proposer prior to opening directly or indirectly to any other Bidder/Proposer or to any competitor; and

3. No attempt has been made or will be made by the Bidder/Proposer to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

No bid/proposal will be considered for award nor shall any award be made where paragraphs 1, 2, and 3 above have not been complied with; provided however, that if in any case the bidder/proposer cannot make the foregoing certification, the bidder/proposer shall so state and shall furnish with the bid/proposal a signed statement which sets forth in detail the reasons therefor. Where paragraphs 1, 2 and 3 above have not been complied with, the bid/proposal shall not be considered for award nor shall any award be made unless the County determines that such disclosure was not made for the purpose of restricting competition.

The fact that a Bidder/Proposer: a) has published price lists, rates, or tariffs covering items being procured, b) has informed prospective customers of proposed or pending publication of new or revised price lists for such items, or c) has sold the same items to other customers at the same prices being bid/proposed does not constitute, without more, a disclosure hereunder.

I,_____hereby affirm under penalty of perjury under the Laws of the State of New York that I am authorized to provide this certification and that the above is true and correct.

_____
Name of Entity

_____ _____
Signature of Authorized Representative Date

Springville Fire Department

Village of Springville
New York

SPECIFICATIONS
FOR:

One (1) Pumper
Fire Apparatus

Bidder Complies	
Yes	No

INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to provide a complete apparatus equipped as hereinafter and as specified. With a view to obtaining the best results and the most acceptable apparatus for service in the Department, these specifications cover only the general requirements as to the type of construction and tests to which the apparatus must conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall 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 for all features. The manufacturer shall provide loose equipment only when specified by the customer. The (NFPA) 1901, Standard for Automotive Fire Apparatus, unless otherwise specified as requested by the customer in these specifications, shall prevail.

The apparatus must meet all NFPA, DOT, ICC, AE, TRA, FMVSS and local state Motor Vehicle Requirements.

It is required that the apparatus be manufactured to current NFPA edition standards, all NFPA equipment (LOOSE EQUIPMENT) not specified in the specifications will not be provided by the contractor.

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

The bidder of the apparatus herein specified; shall be wholly owned (100%) and managed by a Company, Corporation, and/or Parent Company that is wholly based, and permanently resides in the United States of America.

The Company, Corporation, and/or Parent Company and all assets belonging to such; shall be wholly owned and managed (100%) by the entities specified above.

Bidder Complies	
Yes	No

The bidder shall state the location of the manufacturing facility where the apparatus is to be built and the location of the parent company if a subsidiary of a manufacturer.

The bidder shall provide satisfactory evidence of their ability to construct the apparatus specified in the bidders manufacturing facilities.

The bidder's representation shall state the length of time representing the manufacturer of specified apparatus.

The bid shall be accompanied by a set of "Contractor's Specifications" consisting of a detailed description of the apparatus being furnished under this contract which conform. Computer runoff sheets are not acceptable as "Contractor's Specifications". Item compliance shall be indicated in the "Yes/No" column of each item by all Bidders. Note: Each bidder shall submit their bid in the same sequence as these specifications to allow the department to easily compare.

These specifications shall indicate size, type, model and make of all component parts and equipment.

QUALITY AND WORKMANSHIP

The design of the Apparatus shall embody the latest approved automotive engineering practices.

The workmanship must be of the highest quality in its respective field. Special consideration will be given to the following points: Accessibility of the various units, which require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions.

Construction shall be rugged and ample safety factors shall be provided to carry loads as specified and to meet both on and off-road requirements and to speed conditions as set forth under "Performance tests and requirements".

Welding shall be employed in the assembly of the apparatus in a manner that will not prevent the ready removal of any component part for service or repair, with apparatus bodies of bolt together design not being acceptable.

Bidder Complies	
Yes	No

All steel welding shall follow American Welding Society requirements for AWS D1.1:2012 Structural Welding Code for welding steel structural assemblies. All aluminum welding shall follow American Welding Society requirements for AWS D1.2/D1.2M:2003 Structural Welding Code for any type structure made from aluminum structural alloys. All sheet metal welding shall follow American Welding Society AWS D9.1M/D9.1:2006 Structural Welding code for Arc/Braze requirements of non-structural materials. All pressure pipes welding shall follow American Society of Mechanical Engineers ASME IX/ ASME B31:2010 requirements to the qualification of procedures in welding and brazing, in accordance with the ASME Boiler and Pressure Vessel Code and the ASME B31 Code for Pressure Piping. Flux core arc welding to use alloy rods, type 7000, American Welding Society AWS standards A5.20-E70T1. The manufacturer shall be required to have an American Welding Society certified welding inspector in plant during testing operations within working hours to monitor weld quality.

Employees classified as welders shall be tested and certified to meet American Welding Society and American Society of Mechanical Engineers welding codes.

SERVICE

Due to the importance of keeping this vital piece of firefighting apparatus in service with a minimum of downtime, the manufacturer shall maintain a network of service centers with factory-trained personnel.

Each bidder shall certify its local dealer as its designated service, parts and sales representative. The designee shall provide detailed information who, shall maintain at minimum a service center with EVT certified technicians to service all apparatus it represents. NO EXCEPTIONS

The service center shall at minimum staff no fewer than four (4) full time, EVT certified technicians including; one (1) designated mobile mechanic with a fully outfitted mobile service vehicle, 24-hour service contact name and phone number, fully insured repair and collision shop with frame/ chassis straightening capabilities and at least two (2) onsite, EPA certified automotive paint booths.

Bidder Complies	
Yes	No

All bidders shall provide information including; insurance of liability, submission of photos of the required service center and mobile service vehicles, as well as a list of all employees, dedicated to Emergency Apparatus repair, maintenance, testing, certification with copies of each employee's EVT Certifications.

DELIVERY

The bidder shall provide the number of calendar days from the date the bid is awarded to the delivery of the completed unit.

A qualified delivery engineer representing the contractor shall deliver the apparatus and instruct the Fire Department personnel in the proper operation, care and maintenance of the equipment delivered.

Bidder Complies	
Yes	No

BIDDERS AFFIDAVIT

Failure to sign and return this affidavit shall be grounds for immediate rejection of the bid. Each line or paragraph shall be accurately responded to in the YES/ NO column on each page of the specification, contained. Failure to follow these basic instructions will result in immediate rejection of the proposal. If the bidder is unable to respond 100% to any line or sections, "NO" shall be indicated and a supporting clarification or exceptions, in written form, shall be provided on a separate page, listing the page number and paragraph.

I, _____, as the authorized agent for

_____ do hereby attest and affirm that the following information is true and that the proposal submitted by our firm complies with the general instructions, requirements, and specifications contained in this bid submission, except where indicated below.

The apparatus offered is proposed by a single- point of contact, factory authorized dealership WITH factory certified mobile and service center capabilities located within 120 miles of the Springville FD headquarters.
(No 3rd party service providers shall be accepted)

The apparatus proposed is not a prototype, demonstrator or stock unit.

The performance tests shall be performed in compliance with the specifications and all applicable standards.

All pages of the General Instructions Requirements and Specifications have been received and reviewed and responses as instructed are complete.

All questionnaires and blanks have been accurately filled in.

A properly executed Bid Bond is enclosed.

Bidder complies with bid specifications 100%

Bidder complies with Design Criteria.

Bidder Complies	
Yes	No

Bidder has included Apparatus Drawings per specifications.

Apparatus proposed complies with dimensional requirements.

The Bidder provides for training of personnel as described.

All specified warranties are included.

All proposed warranties are in compliance with specifications.

The proposed apparatus and equipment are new and unused.

A complete copy of the bidder's detailed proposal is included.

A separate list of exceptions is attached referencing each page number, paragraph and specification.

State the dimensions of the proposed apparatus:

a. Overall height: _____

b. Overall length: _____

c. Overall width: _____

Delivery of the apparatus shall take place within (180) calendar days after the execution and acceptance of a contract and/or approved purchase order, without exception

Bidder Complies	
Yes	No

Authorized Agent Information:

Name (printed): _____
Address: _____
_____

Contact person: _____
Phone: _____
Fax: _____

Agent Signature: _____
Date: _____

Manufacturer Information:

Name: _____
Address: _____
_____

Phone: _____
Fax: _____

Bidder Complies	
Yes	No

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be conducted with the apparatus fully loaded to its estimated in-service weight and shall be capable of the following performance while on dry paved roads that are in good condition and for a continuous run of ten (10) miles or more, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. The successful bidder shall furnish a Weight Certificate showing weights on front axle, rear axles and total weight for the completed apparatus at time of delivery.

- The apparatus shall be capable of accelerating to 35 MPH (55 km/hr) from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed RPM of the engine.

- The apparatus, fully loaded, shall be capable of obtaining a minimum top speed of 50 MPH (80 km/hr) on a level dry concrete highway with the engine not exceeding its governed RPM (fully loaded).

- The service brakes shall be capable of stopping a fully loaded vehicle in 35ft (10.7 m) at 20 mph (32.2 km/hr) on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.

- The apparatus, when fully loaded, shall have not less than 25 percent or more than 50 percent of the weight on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle.

- The contractor shall have the Underwriter's Laboratories, LLC conduct the tests of the apparatus as in accordance with standard practices required by the Underwriter Laboratories, LLC (Guide for the Certification of Fire Department Pumper latest edition). A copy of all tests shall accompany the Apparatus. (For apparatus sold within Canadian ULC S515 latest revision shall prevail).

Bidder Complies	
Yes	No

- The contractor shall furnish copies of the Pump Manufacturer's Certification of hydrostatic test, the Engine Manufacturer current certified brake horsepower curve, and the Manufacturer's record of pumper construction details when delivered.

INFORMATION REQUIRED

The manufacturer shall supply at time of delivery, a complete operation and maintenance manual covering the completed apparatus as delivered.

A Fire Apparatus Safety Guide published by Fire Apparatus Manufacturer's Association shall be provided with the apparatus upon delivery. This manual includes essential safety information for fire fighters, fire chiefs, apparatus mechanics, and fire department safety officers. The guide is applicable to municipal, wildland, and airport firefighting apparatus manufactured on either custom or commercial chassis.

A permanent plate shall be mounted in the driver's compartment to specify the quantity and type of the following fluids used in the vehicle: Engine oil, engine coolant, and chassis transmission fluid, pump transmission lubrication fluid, pump primer fluid (if used) and drive axle lubrication fluid.

The manufacture shall supply the final certification of GVWR and GAWR on a nameplate affixed to the vehicle.

A permanent plate in the driver's compartment shall be installed, specifying the seating capacity of the enclosed cab.

Signs that state "OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION" shall be provided and will be visible from each seated position. An accident prevention sign shall be located at the rear step area of the apparatus. It shall warn all personnel that standing on the step while apparatus is in motion shall be prohibited.

A nameplate indicating the chassis transmission shift selector position to be used when pumping shall be provided in the driving compartment and located so that it can be easily read from the driver's position.

Bidder Complies	
Yes	No

GENERAL CONSTRUCTION

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles, so that all specified equipment, including filled water tank, a full complement of personnel and fire hose will be carried without injury to the apparatus. Weight balance and distribution shall be in accordance with the recommendations of the (NFPA) 1901, Standard for Automotive Fire Apparatus, documentation.

The apparatus shall be designed so that all recommended daily maintenance checks can be performed easily by the operator without the need for hand tools. Apparatus components that interfere with repair or removal of other major components must be attached with fasteners (cap, screws, nuts, etc.) so that the components can be removed and installed with normal hand tools. These components must not be welded or otherwise permanently secured into place.

The GAWR and GVWR of the chassis shall be adequate to carry the fully equipped apparatus including all tanks filled, the specified hose load, unequipped personnel weight, ground ladders and a miscellaneous equipment allowance per NFPA criteria. It shall be the responsibility of the purchaser to provide the contractor with the weight of equipment to be carried if it is in excess of the allowance as set forth by NFPA.

The unequipped personnel weight shall be calculated at 250 lbs. per person times the maximum number of persons to ride on the apparatus.

The height of the fully loaded vehicle's center of gravity shall not exceed the chassis manufacturer's maximum limit.

The front to rear weight distribution of the fully loaded vehicle shall be within the limits set by the chassis manufacturer. The front axle loads shall not be less than the minimum axle loads specified by the chassis manufacturer, under full loads and all other loading conditions.

The difference in weight on the end of each axle, from side to side, when the vehicle is fully loaded and equipped shall not exceed 7 percent.

Bidder Complies	
Yes	No

The apparatus shall be so designed that the various parts are readily accessible for lubrication, inspection, adjustment and repair.

Where special tools manufactured or designed by the contractor and are required to provide routine service on any component of the apparatus built or supplied by the contractor, such tools shall be provided with the apparatus.

EXCEPTIONS TO SPECIFICATIONS

The following specifications shall be strictly adhered to. Exceptions shall be allowed if they are equal to or superior to that as specified and providing, they are listed and entirely explained on a separate page entitled "Exceptions to Specifications". The exceptions list to refer to specification page number and paragraph.

Proposals taking total exception to specifications or total exception to certain parts of the specifications such as Electrical Systems, Chassis, Body or Pump, will not be accepted.

Prototype units will not be acceptable. Apparatus shall be inspected upon completion for compliance with specifications.

Deviations will not be tolerated and will be cause for rejection of Apparatus unless they were originally listed in bidder's proposal and accepted in writing by the department.

If the bidder takes an exception, on the exception page, the bidder must state an option price to bring their specifications into full compliance with the Department specifications.

Failure to provide this information shall be cause to reject the proposal as being non-responsive.

Copied or run off sheets of these specifications shall be unacceptable and the bid will be rejected no exceptions.

Bidder Complies	
Yes	No

PURCHASER'S RIGHTS

The Purchaser reserves the right to accept or reject any or all bids as it deemed in their best interests.

BID/PROPOSAL DRAWINGS

For purposes of evaluation, the bidder shall provide a drawing illustrating, but not limited to, the overall dimensions, wheelbase, and overall length of the proposed apparatus and other specified equipment, shall be required to be included with the bidder's proposal package.

The drawings shall be large, minimum 11.00 inches x 17.00 inches.

Smaller size drawings, "similar to" drawings or general sales drawings, shall not be acceptable.

Failure to provide a bid evaluation drawing in accordance with these specifications shall be cause for rejection of the bid proposal.

SINGLE SOURCE MANUFACTURER

Bids shall only be accepted from a single source apparatus manufacturer.

The definition of single source manufacturer is a company that designs and manufactures their products utilizing an approach that includes complete product integration, including the apparatus chassis, cab, and body modules being constructed, assembled, and tested on company premises only.

Warranties qualified to the chassis and body design construction (excluding vender component warranties such as engine, axles, transmission, and pumps, etc.) will be from a single source manufacturer and not separated between manufacturers (i.e. body and chassis). The bidder shall provide evidence of maintaining compliance to this requirement.

Bidder Complies	
Yes	No

TAG-ON ORDERS-COOPERATIVE PURCHASING

Other fire departments, metropolitan regions, or municipalities may purchase apparatus and equipment from same manufacture similar to the Apparatus and Equipment that is the subject of this Contract held by the same manufacture. The following terms shall apply to any such tag-on orders:

(a) Changes - Tag-on orders utilizing the same specification as the Apparatus and Equipment that is the subject of this Contract in order to provide favorable pricing and lead-times to other buyers due to having such specification fully engineered. Limited changes will be permitted. Such changes will be captured in the pre-construction meeting and the price of any tag-on unit adjusted accordingly.

(b) Term – Tag-on orders may be placed for a term of one year after the Effective Date of this Contract.

(c) Escalation - Manufacture reserves the right to adjust the price of any tag-on order if material costs escalate during the term of this Contract, changes in regulations become effective (for example EPA, NFPA or other), or the tag-on order would cross a model year.

(d) Acceptance – Manufacture holding the contract reserves the right to accept or reject any tag-on orders under this Contract.

SURCHARGE

Notwithstanding anything to the contrary in this Agreement, if the costs to Seller of acquiring any of the raw materials (including without limitation actual raw materials and/or conversion costs) used in the production and supply of the product(s) and/or goods (including, without limitation, the costs of acquiring raw materials, costs associated with tariffs, labor costs, shipping costs, or any other costs) materially increase from the cost levels as of the date of this Agreement, the parties agree that (1) Buyer shall have the obligation to pay and reimburse to Seller such increased costs, or (2) Seller shall have the right in its discretion to terminate this Agreement, without further liability, upon ten (10) days' notice to buyer. For purposes hereof, a "material increase" is defined to mean 5% of the quoted product and/or goods.

Bidder Complies	
Yes	No

SUPPLIED INFORMATION & EXTRAS

The apparatus manufacturer shall supply two (2) copies of apparatus manuals with all manufactured apparatus.

The manuals shall include, but not be limited to: all component warranties, users' manuals and information for supplied products, apparatus engineering information including drawings and build prints, and whatever other pertinent information the manufacturer can supply to its customer regarding the said apparatus.

Included in the delivery of the unit, the manufacturer shall also include spare hardware and extra fasteners, paint for touch-up, information regarding washing and care procedures, as well as other recommendations for care and maintenance of the general apparatus.

The manufacturer shall also supply a manufacturer's record of apparatus construction details, including the following information:

1. Owner name and address
2. Apparatus manufacturer, model, and serial number
3. Chassis make, model, and serial number
4. GAWR of front and rear axles
5. Front tire size and total rated capacity in kilograms
6. Rear tire size and total rated capacity in kilograms
7. Chassis weight distribution in kilograms with water (if applicable) and manufacturer mounted equipment (front and rear)
8. Engine make, model, serial number, rated horsepower, related speed and no-load governed speed
9. Type of fuel and fuel tank capacity
10. Electrical system voltage and alternator output in amps
11. Battery make and model, capacity in CCA
12. Paint numbers
13. Weight documents from a certified scale showing actual loading on the front axle, rear axle(s), and overall vehicle (with the water tank full (if applicable) but without personnel, equipment, and hose)
14. Written load analysis and results of the electrical system performance tests

Bidder Complies	
Yes	No

15. Transmission make, model, and type
16. Pump to drive through the transmission (yes or no)
17. Engine to pump gear ratio and transmission gear ratio used
18. Pump make and model, rated capacity in gallons per minute, serial number, and number of stages
19. Pump manufacturer's certification of suction capability
20. Pump manufacturer's certification of hydrostatic test
21. Pump manufacturer's certification of inspection and test for the fire pump
22. Copy of the apparatus manufacturer's approval for stationary pumping applications
23. Pump transmission make, model and serial number
24. Priming device type
25. Type of pump pressure control system
26. The engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum no load governed speed
27. Certification of the water tank capacity

WARNING AND INFORMATION LABELS

All warning and informational labels (non-vendor specific) shall be provided in compliance with (NFPA) 1901, Standard for Automotive Fire Apparatus, and installed in the appropriate locations to alert the operator of potential hazards and operating instructions.

LIABILITY INSURANCE COVERAGE

In order to protect the department and its personnel, the bidder shall show proof that it has no less than $20 million in liability insurance in force. A certificate of coverage shall be included in the bid package. Failure to carry liability insurance of at least this amount or failure to include proof of coverage shall be cause to reject the bidder's proposal.

PUMP CERTIFICATION AND TESTING

The apparatus upon completion will be tested and certified by Underwriters Laboratories, LLC. The certification tests will follow the guide lines outlined in (NFPA) 1901, Standard for Automotive Fire Apparatus.

Bidder Complies	
Yes	No

There shall be multiple tests performed by the contractor and Underwriter's Laboratories, LLC when the apparatus has been completed. The manufacturer shall provide the completed Test Certificate(s) to the purchaser at time of delivery. The inspection services of Underwriters Laboratories, LLC are available to all bidders on an equal basis; therefore, no third-party certification of testing results shall be acceptable.

LOW-VOLTAGE ELECTRICAL SYSTEM PERFORMANCE TESTING

The apparatus low-voltage electrical system will be tested and certified. Tests shall be performed when the air temperature is between 0 degrees Fahrenheit and 110 degrees Fahrenheit (–18 degrees Celsius and 43 degrees Celsius). The three tests defined in NFPA shall be performed in the order in which they appear. Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for 10 minutes. Failure of any of these tests shall require a repeat of the sequence.

PRE-CONSTRUCTION CONFERENCE

A local, in-station preconstruction conference shall be provided by the local authorized dealer representative, to review the specification and answer any questions of the purchaser to ensure a smooth order and production process.

FINAL INSPECTION CONFERENCE

The factory authorized Distributor shall be required, during manufacturing, to have a final completion inspection conference at the site of the manufacturing facility with up to six (6) individuals from the Springville Fire Department.

The transportation and lodging expenses will be the responsibility of the purchaser. Actual expenses shall be itemized and billed to the customer in lieu of estimated (often excessive) travel expenses being included in the purchase price.

Bidder Complies	
Yes	No

PUMP & APPARATUS TRAINING

The successful bidder shall provide a factory-trained technician to provide the following training:

It is intended that this training be organized in such a manner that both the mechanics and fire personnel receive full benefit of the aforementioned structured training. The firefighter/operator training shall be conducted within one week after the vehicle is fully accepted and readied for service by the "Purchaser" or at a time mutually agreed upon by the "Purchaser" and "Supplier".

Operational training shall consist of general operations;
safety, general maintenance, electrical system operations,
Fire pump, electrical generator, foam system operations (if applicable);
routine cleaning and maintenance of fire body features, safety considerations in emergency and non-emergency situations, overhead hazard awareness if a light tower or aerial device is included, procedures regarding proper emergency shut down of all systems.

This training shall not be considered an equivalent to, or guided by standards found in NYS course work for: EVOC, Pump Operations or Scene Safety Awareness as described by the NYS Office of Fire Prevention and Control.

MAXIMUM OVERALL LENGTH REQUIREMENT

The Apparatus specified shall be constructed as detailed and shall NOT exceed a Maximum Overall Length of 33'-5".

MAXIMUM OVERALL HEIGHT REQUIREMENT

The Apparatus specified shall be constructed as detailed and shall NOT exceed a Maximum Overall Height of 9'-7".

MAXIMUM WHEEL BASE REQUIREMENT

The Apparatus specified shall be constructed as detailed and shall NOT exceed a Maximum Wheel Base of 206".

Bidder Complies	
Yes	No

MAXIMUM OVERALL WIDTH OF NINETY-NINE (99) INCHES

The apparatus specified shall be constructed as detailed and shall NOT exceed a Maximum Overall Width of Ninety-nine (99.00) inches.

This dimension shall include the primary construction of the apparatus body and chassis cab. Any peripheral items shall not be incorporated into this measurement.

The items included, but not limited to, are: Rub Rails, Fenderettes, Mirrors, Lights, Handrails, Front Bumpers, Cab Steps, Overlays, Etc.

CHASSIS REQUIRED LABELING

Signs that state "Occupants must be seated and belted when apparatus is in motion" shall be provided.

They shall be visible from each seating position.

There shall be a lubrication plate mounted inside the cab listing the type and grade of lubrication used in the following areas on the apparatus and chassis:

- Engine oil
- Engine Coolant
- Transmission Fluid
- Pump Transmission Lubrication Fluid
- Drive Axle Lubrication Fluid
- Generator Lubrication Fluid (where applicable)
- Tire Pressures

APPARATUS INFORMATION LABEL

There shall be a high-visibility label installed in a location clearly detectable to the driver while in the seated position.

Bidder Complies	
Yes	No

The label shall indicate the following specified information.

Overall Height (feet and inches)
Overall Length (feet and inches)
Overall GVWR (tons or metric tons)

CAB & CHASSIS

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 2020 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. Spartan Chassis is not responsible for compliance to state, regional, or local regulations. Dealers should identify those regulations and order any necessary optional equipment from Spartan Chassis 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 exterior caution, warning, and safety notice labels shall be in a decorative chrome bezel.

Bidder Complies	
Yes	No

APPARATUS TYPE

The apparatus shall be a pumper vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump. 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.

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 20,000 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.

Bidder Complies	
Yes	No

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. Chassis driveline pump provisions shall include an interlock feature for automatic setting of the park brake when the vehicle is shifted into pump mode while the transmission is in neutral and the transmission output speed translates to less than 1 mph. When the conditions are met the driver side parking brake valve shall activate. Once shifted to road mode the condition for electric automatic brake engagement is no longer present and the driver's parking brake control valve shall function normally.

CAB STYLE

The cab shall be a custom, fully enclosed, medium four-door (MFD) 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.

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.

Bidder Complies	
Yes	No

The cab side walls, roof skins, the rear wall and the front cab structure shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 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 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 131.10 inches with 54.00 inches from the centerline of the front of the axle to the back of the cab.

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

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner in the non-raised roof area 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 51.00 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 40.00 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 32.00 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.

Bidder Complies	
Yes	No

The first step for the driver and officer area shall measure approximately 11.50 inches deep X 31.00 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 13.00 inches.

OCCUPANT PROTECTION

The vehicle shall include the occupant protection which shall secure belted occupants and increase the survivable space within the cab. The system shall selectively deploy integrated devices to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the system shall also provide ejection mitigation protection.

The system components shall include:

- Driver steering wheel airbag
- Driver dual knee air bags, with energy management mounting and officer knee airbag.
- Large driver, officer, and crew area side curtain airbags
- Advanced seat belt system - retractor pre-tensioners tighten the seat belts around the occupants, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries

- Heavy truck Restraints Control Module (RCM) - receives inputs from the outboard sensors, selectively deploys components integrated into the system and records sensory inputs immediately before and during a detected qualifying event

Bidder Complies	
Yes	No

- Integrated outboard crash sensors mounted at the perimeter of the vehicle - detects a qualifying front or side impact event and monitors and communicates vehicle status and real time diagnostics of all critical subsystems
- Fault-indicating Supplemental Restraint System (SRS) light on the driver's instrument panel

Frontal impact protection shall be provided by the outboard sensors. In a qualifying front impact event, the outboard sensors provide inputs to the RCM. The RCM activates the steering wheel airbag, driver side dual knee airbags, officer side knee airbag, and advanced seat belts for each occupant in the cab.

Rollover, side impact, and ejection mitigation shall be provided by the outboard sensors and the RCM. In qualifying rollover or side impact events the outboard sensors provide inputs to the RCM. The RCM activates the side curtain airbags and advanced seat belts for each occupant in the cab. The RCM measures roll angle, lateral acceleration, and roll rate to determine if a rollover event or side impact event is imminent or occurring.

In the event of a qualifying offset or other non-frontal impact, the RCM shall determine and intelligently deploy the front impact protection system, the side impact protection system, or both front and side impact protection systems based on the inputs received from the outboard crash sensors.

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.

Bidder Complies	
Yes	No

FRONT GRILLE

The front fascia shall include a box style, 304 stainless steel front grille. 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 shall be painted 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 entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high-quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent 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 a sanding of the cab with 360 grit paper followed by sealing the seams with SEM brand seam sealer.

Bidder Complies	
Yes	No

The cab shall then be painted the specific color designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene. The paint shall have a minimum thickness of 2.00 mils, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

CAB PAINT MANUFACTURER

The cab shall be painted with PPG Industries paint.

CAB PAINT PRIMARY/LOWER COLOR

The lower paint color shall be PPG FBCH 75381 Red.

CAB PAINT SECONDARY/UPPER COLOR

The secondary/upper paint color shall be PPG FBCH 91785 white.

CAB PAINT EXTERIOR BREAKLINE

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

CAB PAINT PINSTRIPE

Where the upper and lower paint colors meet a temporary 0.50-inch-wide black pinstripe shall be applied over this break line to offer a more finished appearance.

CAB PAINT WARRANTY

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

Bidder Complies	
Yes	No

Warranty documents must be provided with each proposal.

CAB PAINT INTERIOR

The visible interior cab structure surfaces shall feature a medium gray spray on bedliner coating which shall mold to each surface of the cab interior. The coating shall be environmentally friendly and chemically resistant.

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.

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. Door assemblies with hardware exposed to the 'elements' will not be accepted. Each door hinge shall be piano style 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 1.00-inch-thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

CAB STRUCTURAL WARRANTY

Summary of Warranty Terms:

Bidder Complies	
Yes	No

The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. The warranty period shall commence on the date the vehicle is delivered to the first end user.

Warranty documents must be provided with each proposal.

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.

ELECTRICAL SYSTEM

The chassis shall include a single starting electrical system which shall include a 12-volt direct current multiplexing system, 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.

MULTIPLEX DISPLAY

The multiplex electrical system shall include a Weldon Vista IV display which shall be located on the left side of the dash in the switch panel. The Vista IV shall feature a full color LCD display screen which includes a message bar displaying the time of day and important messages requiring acknowledgement

Bidder Complies	
Yes	No

by the user which shall all be displayed on the top of the screen in the order they are received. There shall be eight (8) push button virtual controls, four (4) on each side of the display for the on-board diagnostics. The display screen shall be video ready for back-up cameras, thermal cameras, and DVD.

The Vista IV display shall offer varying fonts and background colors. The display shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.

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.

Bidder Complies	
Yes	No

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 150 amp master switched and manually resettable breaker protected 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 extra set of power and ground studs shall be provided and installed on the forward-facing center seat frame between the seats at the rear wall of the cab. The studs shall be 0.38-inch diameter capable of carrying up to a 40 amp battery direct load.

ADDITIONAL ACCESSORY POWER

An additional set of power and ground studs shall be provided. The power and ground stud cables will be routed through the rear panel of the engine tunnel centered between the sides and drilled 3.00 inches from the floor. 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. There will be a 3.00 feet loop of wire provided inside of the truck for customer mounting of the power and ground studs.

EXTERIOR ELECTRICAL TERMINAL COATING

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

Bidder Complies	
Yes	No

ENGINE

The chassis engine shall be a Cummins L9 engine. The L9 engine shall be an in-line six (6) cylinder, four-cycle diesel-powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250-foot pounds of torque at 1400 RPM with 543 cubic inches (8.9 liters) of displacement.

The L9 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 2017 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 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, 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.

Bidder Complies	
Yes	No

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 virtual Vista button 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. The device 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. There shall be an indicator on the Vista display and control screen for the high idle speed control.

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.

Bidder Complies	
Yes	No

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.

Bidder Complies	
Yes	No

ENGINE WARRANTY

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

Warranty documents must be provided with each proposal.

REMOTE THROTTLE HARNESS

An apparatus interface wiring harness for the engine shall be supplied. The harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection by the apparatus builder. The harness shall contain connectors for a Fire Research In-Control 300/400 pressure governor and a multiplexed gauge. Separate circuits shall be included for pump controls, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light. The harness shall contain interlocks that will prevent shifting to road or pump mode unless the transmission output speed translates to less than 1 mph and the transmission is in neutral. The shift to pump mode shall also require the park brake be set. The harness shall be designed for a top mount pump panel.

An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions. This harness shall control the inputs for the transmission lock up circuits, governor/hand throttle controls and dash display which shall incorporate "Pump Engaged" and "OK to Pump" indicator lights. The harness shall contain circuits for the apparatus builder to wire in a pump switch.

ENGINE PROGRAMMING IDLE SPEED

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

Bidder Complies	
Yes	No

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 clutched type fan drive.

When the clutched fan is disengaged it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be failsafe 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 be electronically programmed to vary through thermostatic control 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

Bidder Complies	
Yes	No

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.

Bidder Complies	
Yes	No

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.

Bidder Complies	
Yes	No

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, 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 between the DPF and SCR.

The system shall utilize 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.

Bidder Complies	
Yes	No

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.

The tail pipe shall have a drop in it to allow additional clearance from the body.

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.

TRANSMISSION

The drive train shall include an Allison model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

Bidder Complies	
Yes	No

The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 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 3.49:1
2nd 1.86:1
3rd 1.41:1
4th 1.00:1
5th 0.75:1
Rev 5.03:1

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will select the fifth speed operation without the need to press the mode button.

TRANSMISSION FEATURE PROGRAMMING

The Allison Gen V-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.

Bidder Complies	
Yes	No

The Gen V-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

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 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.

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.

Bidder Complies	
Yes	No

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.

Warranty documents must be provided with each proposal.

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with MSI 1710 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 MODEL

The midship pump/gearbox provisions shall be for a Waterous CXSC20 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 101.50 inches.

Bidder Complies	
Yes	No

PUMP SHIFT CONTROLS

One (1) air pump shift control panel shall be located on the left-hand side of the engine tunnel, integrated with the shifter pod. The following shall be provided on the panel: a three (3) position control lever; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline and shall include pump instructions.

An instruction plate describing the transmission shift selector position used for pumping shall be provided and located so it can be read from the driver's position per NFPA **16.10.1.3**. The road mode shall be selected when the control lever is in the forward position and pump mode shall be selected when the control lever is in the rearward position.

The control lever center position shall exhaust air from both pump and road sides of the pump gear box shift cylinder.

PUMP SHIFT CONTROL PLUMBING

Air connections shall be provided from the air supply tank to the pump shift control valve and from the pump shift control valve to the frame mounted bracket. The frame mounted bracket shall include labeling identifying the pump and road connection points with threaded 0.25 inch NPT fittings on the solenoid for attaching the customer installed pump. The air supply shall be pressure protected from service brake system.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fleetguard FS1098 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

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

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

Bidder Complies	
Yes	No

FUEL LINES

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

FUEL SHUTOFF VALVE

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

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

ELECTRIC FUEL PRIMER

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

FUEL COOLER

An aluminum cross flow air to fuel cooler shall be provided to lower fuel temperature allowing the vehicle to operate at higher ambient temperatures. The fuel cooler shall be located behind the rear axle.

FUEL TANK

The fuel tank shall have a capacity of fifty (50) gallons.

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 painted to match the frame components.

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 port shall be offset with the left fill port located in the rearward position on the fuel tank.

A 1.25 inch diameter hole shall be provided in the left and right frame rails for vent hose routing provisions. The holes shall be located adjacent to the fuel tank and 5.13 inches up from the bottom of each rail.

FUEL TANK SERVICEABILTY PROVISIONS

The chassis fuel lines shall have additional length provided so the tank can be easily lowered and removed for service purposes.

Bidder Complies	
Yes	No

The additional 8.00 feet of length shall be located above the fuel tank and shall be coiled and secured. The fuel line fittings shall be pointed towards the right side (curbside) of the chassis.

FUEL TANK DRAIN PLUG

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

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle.

FRONT AXLE WARRANTY

The front axle shall be warranted by Meritor for five (5) years with unlimited miles under the general service application. Warranty documents must be provided with each proposal.

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.

Bidder Complies	
Yes	No

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

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

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

FRONT SUSPENSION

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

STEERING COLUMN/ WHEEL

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

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

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

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

Bidder Complies	
Yes	No

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 65 with an assist cylinder.

CHASSIS ALIGNMENT

The chassis frame rails shall be measured to ensure 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.

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.

Bidder Complies	
Yes	No

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. Warranty documents must be provided with each proposal.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

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.

Bidder Complies	
Yes	No

FRONT TIRE

The front tires shall be Goodyear 385/65R-22.5 18PR "J" tubeless radial G296 MSA mixed service tread.

The front tire stamped load capacity shall be 18,740 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum load capacity shall be 20,050 pounds per axle with a speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum speed capacity shall be 18,740 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear 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 Goodyear 12R-22.5 16LR "H" tubeless radial G182 RSD regional service treads.

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 Goodyear Intermittent Service Rating maximum load capacity shall match the stamped load rating.

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

Bidder Complies	
Yes	No

The Goodyear 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 5.13:1.

TIRE PRESSURE INDICATOR

There shall be electronic chrome LED valve caps 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 LvL One™ polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface.

REAR WHEEL

The rear wheels shall be Alcoa hub piloted, heavy duty, 22.50 inch X 9.00 inch LvL One™ polished aluminum wheels with Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. 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.

Bidder Complies	
Yes	No

WHEEL TRIM

The front wheels shall include stainless steel lug nut covers and stainless-steel baby moons. 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.

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.

WHEEL GUARDS

The rear dual wheels shall include a plastic isolator approximately 0.04" installed between the inner and outer wheel hub to help prevent corrosion caused by metal to metal contact. There shall also be a plastic isolator between the axle hub and the wheels on both front and rear axles.

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 controlled service brake application during 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.

Bidder Complies	
Yes	No

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. The ATC light shall illuminate during excessive wheel slip and ATC is operational.

A virtual 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 shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

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.

Bidder Complies	
Yes	No

PARK BRAKE CONTROL

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

The parking brake actuation valve shall be mounted to the left side of the engine tunnel integrated into the transmission shift pod console within easy access of the driver. The control shall include a protective guard which shall prevent accidental activation of the parking brake and still allow proper actuation of the control.

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 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 mounted behind the battery box on the left-hand side.

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.

Bidder Complies	
Yes	No

This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 36 brake chamber has a 36.00 square inch effective area.

AIR COMPRESSOR

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

AIR GOVERNOR

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

MOISTURE EJECTORS

An automatic moisture ejector with a manual drain provision shall be installed on the wet tank of the air supply system. Manual pet-cock type drain valves shall be installed on all remaining reservoirs of the air supply system.

AIR SUPPLY LINES

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

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

Bidder Complies	
Yes	No

AIR TANK SPACERS

There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 3.00 inches inward towards the center of the chassis. This shall provide clearance between the air tanks and the frame for body U-bolt clearance.

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 206.00 inches.

REAR OVERHANG

The chassis rear overhang shall be 47.00 inches.

FRAME

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

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

Bidder Complies	
Yes	No

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.

The frame and cross members shall carry a lifetime warranty to the original purchaser. Warranty documents must be provided with each proposal.

Proposals offering warranties for frames not including cross members shall not be considered.

FRAME WARRANTY

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty period shall commence on the date the vehicle is delivered to the first end user. Warranty documents must be provided with each proposal.

REAR TOW DEVICE

The frame rails shall contain (6) holes per frame in a pattern for mounting tow eyes at the rear of the frame.

Bidder Complies	
Yes	No

FRAME PAINT

The frame shall be hot dip galvanized prior to assembly and attachment of any components without exception. The components that shall be galvanized shall include without exception:

- 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
- Air tank mounting brackets
- Exhaust mounting brackets
- Air cleaner skid plate
- Radiator skid plate
- Battery supports
- Battery trays
- Battery covers
-

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

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.

Bidder Complies	
Yes	No

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.

FRONT BUMPER

A one piece, two (2) rib wrap-around style, polished stainless-steel front bumper shall be provided. The material shall be 10-gauge 304 stainless steel, 12.00 inches high and 99.00 inches wide.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 18.00 inches ahead of the cab.

FRONT BUMPER APRON

The 18.00-inch extended front bumper shall include an apron constructed of 0.19-inch-thick embossed aluminum tread plate.

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

FRONT BUMPER COMPARTMENT CENTER

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall be the full size of available space in the apron from the cab fascia to the bumper and 38.00 inches wide X 10.88 inches deep. The clear opening shall be 37.75 inches wide. The compartment shall include a cover constructed of bright embossed aluminum tread plate.

Bidder Complies	
Yes	No

FRONT BUMPER COMPARTMENT COVER HARDWARE

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

AIR HORN

The front bumper shall include two (2) 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 on the right side of the bumper in the inboard and outboard positions relative to the right-hand frame rail.

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) Whelen Engineering Inc. model SP123BMC, 100 watt cast aluminum speaker provided. The speaker shall measure 7.25 inches tall X 9.25 inches wide X 5.25 inches deep. The speaker shall include a chrome grille.

ELECTRONIC SIREN SPEAKER LOCATION

The electronic siren speaker shall be located on the front bumper face on the left side outboard of the frame rail in the far outboard position.

Bidder Complies	
Yes	No

FRONT BUMPER TOW HOOKS

Two (2) heavy duty tow hooks, painted to match the frame components, shall be installed in the rearward position out of the approach angle area, bolted directly to the side of each chassis frame rail with grade 8 bolts.

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.

Bidder Complies	
Yes	No

CAB TILT CONTROL RECEPTACLE

The cab tilt control cable shall include a receptacle which shall be 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 using electric actuation. The left and right front door windows shall be controlled using a

Bidder Complies	
Yes	No

switch on each respective side inner door panel. The driver's door shall include a switch for each powered door window in the cab.

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 DOORS

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

GLASS TINT REAR DOORS

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

GLASS SIDE, MID

The cab shall include a window on the right and left side behind the front and ahead of the crew doors which shall measure 16.00 inches wide X 26.00 inches high. These windows shall be fixed within this space and shall be rectangular in shape. The windows shall be mounted using self-locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

Bidder Complies	
Yes	No

GLASS TINT SIDE, MID

The windows located on the mid-sides 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.

Bidder Complies	
Yes	No

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.

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

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 center 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.

Bidder Complies	
Yes	No

A/C COMPRESSOR

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

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. In addition, the insulation shall have a removable aluminum overlay installed to protect the insulation and assist in retaining the insulation tight against the engine tunnel surfaces.

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 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.

Bidder Complies	
Yes	No

INTERIOR TRIM

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

REAR WALL INTERIOR TRIM

The rear wall of the cab shall be trimmed with bright finish aluminum tread plate.

HEADER TRIM

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

TRIM CENTER DASH

The main center dash area shall be constructed of 5052-H32 Marine Grade, 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, aluminum plate for a perfect fit around the instrument panel. For increased occupant protection, the extreme duty left hand dash utilizes 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.

Bidder Complies	
Yes	No

TRIM RH DASH

The right-hand dash shall be constructed of 5052-H32 Marine Grade 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 6.38 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 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 nosing trim for an aesthetically pleasing appearance.

POWER POINT DASH MOUNT

The cab shall include a dual universal serial bus (USB) charging receptacle in the cab dash offset to the right-hand side below the center switch panel to provide a power source for USB chargeable electrical equipment. The dual USB receptacle shall include two ports and shall be capable of up to a 5 Volt 2.1 amp output. Port 1 is optimized for fast charging at 1 amp. Port 2 is optimized for fast charging up to 2.1 amps, when used individually. The receptacles shall be wired battery direct.

AUXILIARY POWER POINT ENGINE TUNNEL

The cab interior shall include a universal serial bus (USB) charging receptacle to provide a power source for USB chargeable electrical equipment. The dual USB receptacle shall include two ports and shall be capable of up to a 5 Volt 2.1 amp output. Port 1 is optimized for fast charging at 1 amp. Port 2 is optimized for fast charging up to 2.1 amps, when used individually. The receptacles shall be wired battery direct. The receptacle shall be located in the mirror control switch panel in the extreme duty dash near the transmission shift module on the tunnel.

Bidder Complies	
Yes	No

STEP TRIM

The first step closest to the ground shall be constructed of polished 5052 H32 aluminum Grip Strut® grating with angled outer corners. The grating shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in embossed aluminum tread plate.

STEP TRIM KICKPLATE

The risers, forward walls, rearward walls, and lower upper step shall feature a medium gray spray on bedliner coating.

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 aluminum plate. The door panels shall include a painted finish.

DOOR TRIM KICKPLATE

The inner door panels shall include an aluminum tread kick plate which shall be fastened to the lower portion of the door panels.

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.

Bidder Complies	
Yes	No

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 logo. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLES "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 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.

Bidder Complies	
Yes	No

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be gray in color.

CAB PAINT INTERIOR

The inner door panel surfaces shall feature a medium gray spray on bedliner coating.

HEADER TRIM INTERIOR PAINT

The metal surfaces in the header area shall feature a medium gray spray on bedliner coating.

TRIM CENTER DASH INTERIOR PAINT

The entire center dash and any accessory pods attached to the dash shall feature a medium gray spray on bedliner coating.

TRIM LEFT HAND DASH INTERIOR PAINT

The left-hand dash shall feature a medium gray spray on bedliner coating.

TRIM RIGHT HAND DASH INTERIOR PAINT

The right-hand dash shall feature a medium gray spray on bedliner coating.

DASH PANEL GROUP

The main center dash area shall include three (3) aluminum 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 panels shall be coated with a black texture finish. The center panel shall be within comfortable reach of both the driver and officer.

Bidder Complies	
Yes	No

SWITCHES CENTER PANEL

The center dash panel shall include six (6) rocker switch positions. Three (3) rocker switch positions in a single row configuration and three (3) rocker switch positions in a separate single row configuration to be located to meet customer needs.

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

SWITCHES LEFT PANEL

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

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

SWITCHES RIGHT PANEL

The right dash panel shall include no rocker switches or legends.

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 provide a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument panel, and an audible alarm.

Bidder Complies	
Yes	No

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and 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 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.

SEAT COLOR

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

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.

Bidder Complies	
Yes	No

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.

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 an integrated system to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the system shall also provide ejection mitigation protection.

The driver's seating area shall include:

- Advanced seat belt system - retractor pre-tensioner tightens the seat belt around the driver, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.
- Large side curtain airbag - protects the driver's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to the driver in a qualifying event by covering the window and the upper portion of the door.

- Dual knee airbags with energy management mounting- protects the driver's lower body from dangerous surface contact injuries, acceleration injuries, and from intrusion as well as locks the lower body in place so the upper body shall be shall be slowed by the load limiting seat belt.
- Steering wheel airbag - protects the driver's head, neck, and upper torso from contact injuries, acceleration injuries, and contact points with intrusive surfaces as a result of a collision.

SEAT OFFICER

The officer's seat shall be an H.O. Bostrom 500 Series Sierra model seat. The seat shall feature two-way manual adjustment and shall include a tapered and padded seat cushion. The seat shall also 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.

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.

Bidder Complies	
Yes	No

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 offer a special mounting position which is 4.00 inches rearward of the standard location offering increased leg room for the occupant.

OCCUPANT PROTECTION OFFICER

The officer's position shall be equipped with an integrated system to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the system shall also provide ejection mitigation protection.

The officer's seating area shall include:

- Advanced seat belt system - retractor pre-tensioner tightens the seat belt around the officer, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

- Large side curtain airbag - protects the officer's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to the officer in a qualifying event by covering the window and the upper portion of the door.
- Knee airbags - protects the officer's lower body from dangerous surface contact injuries, acceleration injuries, and from contact points with intrusive surfaces as a result of a collision as well as locks the lower body in place so the upper body shall be slowed by the load limiting seat belt.

POWER SEAT WIRING

The power for the driver's seat 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 and cushion shall be spring load 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.

Bidder Complies	
Yes	No

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.

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.

Bidder Complies	
Yes	No

OCCUPANT PROTECTION RFO

The rear facing outer seat position(s) shall be equipped with a system that shall selectively deploy integrated devices to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the system shall also provide ejection mitigation protection.

Each rear facing outer seating position shall include:

- advanced seat belt system - retractor pre-tensioners tighten the seat belts around each occupant, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.
- Side curtain airbag - protects each occupant's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to each occupant in a qualifying event by covering the windows and walls adjacent to each seating position with an airbag custom designed for each cab configuration.

SEAT FORWARD FACING CENTER LOCATION

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

SEAT CREW FORWARD FACING CENTER

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

Bidder Complies	
Yes	No

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.

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.

Bidder Complies	
Yes	No

OCCUPANT PROTECTION FFC

The forward-facing center seat position(s) shall be equipped with system that shall selectively deploy integrated devices to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the system shall also provide ejection mitigation protection.

Each forward-facing center seating position shall include:

- APS advanced seatbelt system - retractor pre-tensioners tighten the seat belts around each occupant, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.
- Side curtain airbag - provides ejection mitigation protection to each occupant in a qualifying event by covering the windows and walls adjacent to crew seating with an airbag custom designed for each cab configuration.

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 be constructed of Marine Grade 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.

CAB FRONT UNDERSEAT STORAGE ACCESS

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

Bidder Complies	
Yes	No

SEAT COMPARTMENT DOOR FINISH

All under seat storage compartment access doors shall feature a medium gray spray on bedliner coating.

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.

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.

Bidder Complies	
Yes	No

GRAB HANDLES

The cab shall include one (1) 18.00 inch three-piece knurled aluminum, anti-slip exterior assist handle, installed behind each cab door. The assist handle shall be made of extruded aluminum with a knurled finish to enable non-slip assistance with a gloved hand.

REARVIEW MIRRORS

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

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

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

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

REARVIEW MIRROR HEAT SWITCH

The heat for the rearview mirrors shall be controlled through a virtual button on the Vista display and control screen.

CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 5.00 inches wide made of polished aluminum.

Bidder Complies	
Yes	No

CAB EXTERIOR FRONT & SIDE EMBLEMS

The cab shall include three (3) 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. Each system shall be controlled by a one-quarter turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the "ON" position.

The starter button shall only operate when both the master battery and ignition switches are in the "ON" 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.

Bidder Complies	
Yes	No

BATTERY BOX COVER

Each battery box shall include a steel cover which protects the top of the batteries. Each cover shall be coated the same as the frame and 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.

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 320-amp Leece-Neville 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 40 LPC battery conditioner shall be supplied. The battery conditioner shall provide a 40-amp output for the chassis batteries and a 15-amp output circuit for accessory loads. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position.

Bidder Complies	
Yes	No

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. 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 in the mid position.

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.

ELECTRICAL INLET CONNECTION

The electrical inlet shall be connected to the battery conditioner.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a yellow cover.

HEADLIGHTS

The cab front shall include four (4) rectangular LED headlamps with separate high and low beams mounted in bright chrome bezels.

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 an outboard position within the front fascia chrome bezel.

Bidder Complies	
Yes	No

HEADLIGHT LOCATION

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

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (2) Weldon 9186-8589-24 LED round side marker lights which shall be provided just behind the front cab radius corners.

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) Weldon 9186-1500-20 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.

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 to 80% brilliance when the battery master switch is in the "On" position and the parking brake is released.

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. The ground lighting shall be activated by the opening of the door on the respective cab side, when the parking brake is set and through a virtual button on the Vista display and control screen.

Bidder Complies	
Yes	No

LOWER CAB STEP LIGHTS

The middle step located at each door shall include a recess mounted 4.00-inch round LED light which shall activate with the opening of the respective door.

INTERMEDIATE STEP LIGHTS

The intermediate step well area at each door shall include an LED light within a chrome housing. The 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.

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 be interlocked with the park brake and the marker light activation.

LIGHTBAR PROVISION

There shall be one (1) light bar installed on the cab roof. The light bar installation shall include mounting and wiring to a control switch on the cab dash.

CAB FRONT LIGHTBAR

The lightbar provisions shall be for one (1) Whelen brand Freedom IV LED lightbar mounted centered on the front of the cab roof. The lightbar shall be 72.00 inches in length. The lightbar shall feature twelve (12) red LED light modules and two (2) clear LED light modules. The entire lightbar shall feature a clear lens. The clear lights shall be disabled with park brake engaged. The cable shall exit the lightbar on the right side of the cab.

Bidder Complies	
Yes	No

LIGHTBAR SWITCH

The light bar shall be controlled through the master warning switch. There shall be an additional rocker switch to control the clear lights. The switches shall be clearly labeled for identification.

FRONT SCENE LIGHTS

The front of the cab shall include a Whelen Pioneer model PCH2 contour roof mount scene light 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 one (1) scene light mounted center on the front brow of the cab.

FRONT SCENE LIGHTS ACTIVATION

The front scene lighting shall be activated by a virtual button on the Vista display and control screen and a lighted momentary rocker switch on the dash.

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.

Bidder Complies	
Yes	No

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) lighted momentary rocker switches located in the switch panel, one (1) for each light and by two (2) virtual buttons on the Vista display and control screen(s), one (1) for each light.

INTERIOR OVERHEAD LIGHTS

The cab shall include a two-section, red and clear Weldon LED dome lamp located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 7.00 inches in length X 3.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and via the multiplex display and both the red and clear portion can be activated by individual push lenses on each lamp.

An additional two-section, red and clear Weldon LED dome lamp shall be provided over the engine tunnel which can be activated by individual switches on the lamp.

AUXILIARY DOME LIGHT FRONT CREW

The cab shall include two (2) Whelen LED red/clear type auxiliary dome lights in the headliner inboard of the rear facing crew seat. They shall be rectangular shaped and measure approximately 7.00 inches in length X 3.00 inches in width, with a black colored bezel. The clear portion of each light shall be activated by the rear doors as well as a push button on each light. The red portion of each light shall be activated by a push button on each light only.

ENGINE COMPARTMENT LIGHT

There shall be a LED NFPA compliant light mounted under the engine tunnel for area work lighting on the engine.

Bidder Complies	
Yes	No

The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. 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 Whelen Ion 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, as a virtual button on the Vista display and control screen which shall be labeled "E Master" for identification. The button shall feature control over all devices wired through it. Any warning device switches left in the "ON" position when the master switch is activated shall automatically power up.

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.

Bidder Complies	
Yes	No

HEADLIGHT FLASHER SWITCH

The flashing headlights shall be activated through the master warning switch. The headlight flasher shall turn off with the light bar clear light switch.

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. The lights shall be mounted to the front fascia of the cab within a chrome bezel. The warning lights shall be set to emit the "TripleFlash 75" in/out flash pattern.

INBOARD FRONT WARNING LIGHTS COLOR

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

FRONT WARNING SWITCH

The front warning lights shall be controlled through a virtual control on the Vista display and control screen. 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. The lights shall be set to flash "TripleFlash 75" I/O flash pattern.

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red with a clear lens.

Bidder Complies	
Yes	No

INTERSECTION WARNING LIGHTS LOCATION

The intersection lights shall be mounted on the side of the bumper in the rearward position.

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. The light shall be programmed to emit the "TripleFlash 75" in/out flash pattern.

SIDE WARNING LIGHTS COLOR

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

SIDE WARNING LIGHTS LOCATION

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

SIDE AND INTERSECTION WARNING SWITCH

The side warning lights shall be controlled through a virtual button on the Vista display and control screen. This button shall be clearly labeled for identification.

INTERIOR DOOR OPEN WARNING LIGHTS

The interior of each door shall include one (1) 15.87 inch long X 0.73 inch tall amber Weldon LED warning light. The light shall be located on the upper portion of the door frame to be visible when a person is standing in front of the door while entering or exiting the cab. Each light shall activate with a scrolling directional flash pattern which moves from inside to outside when the door is in the open position. This shall serve as a warning to oncoming traffic.

Bidder Complies	
Yes	No

SIREN CONTROL HEAD

A Whelen 295HFSC9 electronic siren control head shall be provided. The siren head shall feature a 200-watt output, wail, yelp, manual siren, 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. The siren shall be mounted to protrude through the center panel of the cab dash in the lower section centered from left to right in the panel.

STEERING WHEEL HORN BUTTON SELECTOR SWITCH

A virtual button on the Vista display and control screen shall be provided to allow control of the electric horn or the air horn from the steering wheel horn button. The horn button selection shall default to the air horn each time the Vista screen power is cycled off and on. The electric horn shall be disabled when the virtual button is in the air horn control.

AIR HORN ACTIVATION

The air horn activation shall be accomplished through the steering wheel button for the driver and 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.

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.

Bidder Complies	
Yes	No

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 $1/8^{th}$ 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

Bidder Complies	
Yes	No

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.

Bidder Complies	
Yes	No

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 white LED backlighting.

Bidder Complies	
Yes	No

RADIO

A Jensen radio with weather band, AM/FM stereo receiver, and four (4) speakers shall be installed in the cab. The radio shall include rear RCA input pigtail connector, satellite radio capability, and a covered front auxiliary mini stereo input with iPod ready front and rear USB inputs. The radio shall be installed in the left-hand overhead position. The speakers shall be installed inside the cab with two (2) speakers recessed within the headliner of the front of the cab just behind the windshield and two (2) speakers on the upper rear wall of the cab.

There shall also be an auxiliary port installed for use with an Mp3 player or smart phone. The auxiliary port shall be located in the right-hand switch panel.

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.

CAMERA REAR

One (1) Audiovox Voyager heavy duty box shaped camera shall be installed on 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.

Bidder Complies	
Yes	No

CAB EXTERIOR PROTECTION

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

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.

DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION

Diagnostic software for the Occupant Protection System shall be available for free download from the website to authorized dealers and service centers, as well as the vehicle owner.

The software has been validated to be compatible with the following RP1210 interface adapters:

- Dearborn Group DPA4 Plus
- Noregon Systems JPRO® DLA+
- Cummins INLINE5
- Cummins INLINE6
- NexIQ™ USB-Link™

The software and adapter utilize the SAE J1939-13 heavy duty nine (9) pin connector which is located below the driver's side dash to the left of the steering column.

Bidder Complies	
Yes	No

WARRANTY

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom-built cab and chassis for a period of twenty-four (24) months, or the first 36,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the first end user. Warranty documents must be provided with each proposal.

CHASSIS OPERATION MANUAL

The chassis operation manual shall be contained in an on-board USB digital storage device. The chassis operation manual shall be accessible through a USB port provided in the OBD diagnostic panel.

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 wiring schematics and option wiring diagrams shall be contained in an on-board USB digital storage device. The cab and chassis wiring schematics and option wiring diagrams shall be accessible through a USB port provided in the OBD diagnostic panel.

PAINT CONFIRMATION

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

Bidder Complies	
Yes	No

WARNING AND IMFORMATION LABELS

All warning and informational labels (non-vendor specific) shall be provided in appropriate locations to alert the operator of potential hazards and operating instructions.

NFPA 1901

The apparatus and product orientation of the vehicle will be provided per NFPA 1901-2016 revision.

CHASSIS REQUIRED LABELING

Signs that state "Occupants must be seated and belted when apparatus is in motion" shall be provided.

They shall be visible from each seating position.

There shall be a lubrication plate mounted inside the cab listing the type and grade of lubrication used in the following areas on the apparatus and chassis:

- Engine oil
- Engine Coolant
- Transmission Fluid
- Pump Transmission Lubrication Fluid
- Drive Axle Lubrication Fluid
- Generator Lubrication Fluid (where applicable)
- Tire Pressures

APPARATUS STABILITY (CG) CALCULATED STABILITY

Vehicle stability or roll stability shall be presented by methods of calculations or measurements per NFPA 1901, current edition. The calculated or measured center of gravity (CG) shall be no higher than 80 percent of the rear axle track width.

Bidder Complies	
Yes	No

The manufacture shall utilize supplied documents and information detailing specific equipment and locations for purposes of calculating CG. If no such information is supplied the manufacture shall estimate approximate equipment loads based upon the vehicle configuration for such calculations in correspondence with NFPA 1901, current edition, required loadings.

Upon acceptance of the vehicle, a signed manufacture written certification shall be supplied with the fire apparatus before delivery.

MUD FLAPS

Heavy-duty rubber mud flaps shall be installed behind the rear wheels. The mud flaps shall be black rubber type and be bolted in place.

CAB TILT PENDANT CONTROL

There shall be a cab tilt pendant control provided and installed on the right side of the apparatus. The pendant shall be located directly behind the lower auxiliary pump access panel, accessible through a small hinged door secured with a push button style latch. The cab tilt door shall open towards the rear of body.

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

HEAT EXCHANGER

A supplementary heat exchanger cooling system shall be provided with the chassis and shall be complete to the discharge side of the fire pump through the engine compartment, without intermixing, for absorption of excess heat. The heat exchanger shall be adequate in size to maintain the temperature of the coolant in the pump drive engine not in excess of the engine manufacturer's temperature rating under all pumping conditions.

Appropriate drains shall be provided to allow draining the heat exchanger to prevent damage from freezing. A manual shut-off valve shall be supplied at the pump operator's position.

Bidder Complies	
Yes	No

FUEL FILL DOOR

There shall be an aluminum fuel fill assembly located on the apparatus body accessing the chassis supplied fuel tank. The assembly shall be located in the area that best suits efficient fuel filling with the space appropriated.

The fuel fill assembly will have a brushed aluminum door. There shall be a drain in the fuel fill assembly to allow over flow to drain on the back side of the apparatus body.
The fuel fill cap shall be removable, manufactured of plastic materials, green in color and equipped with a tether.

The fuel fill cap shall be labeled "DIESEL FUEL". The stainless-steel fuel fill neck shall have a 3/8" inside diameter vent line installed from the top of the fuel tank to the fill tube.

TOP MOUNT PUMP CONTROL MODULE

The top mount pump operator's control module shall be a console style operated control panel with the operator facing the rear of the apparatus while using the controls. Access to the top mount control panel shall be provided from either side of the apparatus through a walkway support structure. The operator control area shall span the entire width of the pump control module.

The top mount pump control module shall be a self-supported structure mounted independently from the body and chassis cab. The pump module frame shall be constructed entirely of 6061-T6 aluminum extrusions and 5052-H32 aluminum plate.

The pump module design shall allow normal frame deflection through isolation mounts without imposing stress on the pump module structure, walkway area, or side running boards. The pump module support shall bolt directly to the chassis frame web.

Bidder Complies	
Yes	No

PUMP MODULE MOUNTING SYSTEM

The entire pump module assembly shall be mounted so that it "floats" above the chassis frame rails exclusively with torsion isolator assemblies to reduce the vibration and stress providing an extremely durable pump module mounting system.

The pump module substructure shall be mounted above the frame to allow independent flexing to occur between the body and the chassis. Each assembly shall be mounted to the chassis frame rails with steel, gusseted mounting brackets. Each bracket shall be powder coated for corrosion resistance. Each pump compartment mount bracket shall be mounted to the side chassis frame flange with two 5/8"-UNC Grade 5 HHCS.

Each assembly shall have a two-part rubber vibration isolator. The isolator shall be of a specific durometer to carry the necessary loads of the pump module, apparatus body, equipment, tank, water, and hose.

There shall be no welding to the chassis frame rail sides, web or flanges, or drilling of holes in the top or bottom frame flanges between axles. All pump module to chassis connections shall be bolted so that in the event of an accident, the body shall be easily removable from the truck chassis for repair or replacement.

The mounting system shall have a lifetime warranty.

PUMP COMPARTMENT WORK LIGHT

One (1) 24.00 inch model On Scene Access series LED tube light shall be installed inside the pump compartment module to illuminate the plumbing and piping components.

There shall be a rocker switch located on the operator's pump panel, within an Innovative Controls 6-switch chrome bezel, to activate the pump panel lights and the pump compartment work light.

Bidder Complies	
Yes	No

PUMP MODULE PANELS

The panels shall be an integral part of the pump module structure. The driver's and officer's side panels shall consist of a fixed upper diamond plate panel and a removable full height lower panel. The panels shall provide ease of access for service and maintenance. The panels shall be attached to the module frame utilizing mechanical latching devices.

OPERATOR'S GAUGE PANEL

The top operator's gauge panel shall include an integrated formed light shield at the top edge. The gauge panel shall span the entire width of the pump control module. The panel shall be designed to pivot forward and allow access to the backside of the components installed in the panel.
Cable hold-open straps shall be mounted on the gauge panel and module structure to prevent the panel from being completely detached from the pump module.

PUMP PANEL & OPERATOR'S PANEL FINISH

The pump module panels and the operator's panel shall be brushed stainless steel finish.

TOP MOUNT PUMP PANEL LIGHTING

Illumination shall be provided for viewing controls, switches, gauges and instructional labels necessary for proper operation of the apparatus and equipment installed.

The top operator's control panel shall be illuminated by OnScene "Access" LED tube lights. Two (2) 24.00 inch outboard mounted and one (1) center mounted 10.00 inch lights shall be installed within the control panel's integrated light shield.

Each side pump panel shall be illuminated by OnScene "Access" LED tube lights installed within gusseted reinforced embossed aluminum diamond plate steps.

Bidder Complies	
Yes	No

The steps shall serve as light shields and shall be a minimum of 8" deep and have a handrail incorporated into the step. The steps shall be mounted with 3/8" bolts.

PUMP PANEL SWITCHING

There shall be a rocker switch located on the operator's pump panel, within an Innovative Controls 6-switch chrome bezel, to activate all the pump panel lights, the interior pump panel work light, and the pump compartment heater.

WALKWAY

An embossed aluminum diamond plate walkway shall be provided at the front of the top operator's module and shall be approximately 22.00 inches deep.

The walkway shall be integral to the pump compartment module.

WALKWAY STEPS

Two (2) steps shall be installed between the operator stand running board and walkway surface, one (1) each side. The step shall be manufactured of a fixed formed embossed aluminum diamond plate.

Each surface of the step shall comply with NFPA 1901, current edition, for slip resistance.

WALKWAY LIGHTING

Two (2) OnScene 8.00 inch "Access" LED strip lights shall be installed to illuminate the top mount walkway stepping areas, one (1) each side at the front of the pump compartment module.

Two (2) OnScene 8.00 inch "Access" LED strip lights shall be installed to illuminate the side-stepping areas, one (1) each side under the fixed step.

The lights shall be directed towards and positioned to illuminate the stepping surfaces.

Bidder Complies	
Yes	No

WALKWAY LIGHTING ACTIVATION

The walkway step lights shall be activated when the park brake is set.

GRAB RAILS

Two (2) 18.00-inch-long handrails constructed of knurled aluminum tubing shall be installed, one (1) each side, on the side of the pump compartment module to assist in climbing the steps according to NFPA 1901, current edition.

There shall be a 2.00 inch minimum clearance between the bracket and the body.

TOP MOUNT VALVE CONTROLS

Top mount pump panel valve actuation shall be equipped with Class 1 top mount valve controls. The ergonomically designed shall be polished stainless steel with a recessed area for color coding labels. The auto-locking control rod and gear housing shall be polished stainless steel and provide a true positive lock, eliminating valve drift.

RUNNING BOARDS

Running boards shall be installed on each side of the pump compartment module. The running boards shall be constructed of embossed aluminum diamond plate. Each shall be a minimum of approximately 12.00 inches deep by the width of the module.

The running boards shall have a 1.25-inch upward bend on the inside edge to act as a kick plate.

The aluminum diamond plate shall meet recommendations for slip resistant surfaces at the time of proposal.

The running boards shall be attached to a frame mounted outrigger support structure. Each running board to have a 3.00-inch downward bend on the front and side faces with a 1.50-inch underside return for superior strength.

Bidder Complies	
Yes	No

RUNNING BOARD HOSE WELLS

A hose well shall be installed in the running board directly below the pump house module, on the right-hand side.

HOSE RESTRAINTS

There shall be two (2) Velcro straps installed at the top of the hose well. The straps shall be used to hold the hose in place during transit.

APPARATUS LABELING

The apparatus shall be descriptively tagged with color coded Innovative controls labels. The labels shall be applied near apparatus features that require a user function description. Wherever necessary, the labels shall be color coded to differentiate controls and their respective functions to simplify and clarify complex configurations.

VERBIAGE TAG BEZEL ASSEMBLIES

Innovative Controls verbiage tag bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These tags shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish.

SAFETY MESSAGE BEZEL ASSEMBLIES

Innovative Controls safety message bezels shall be installed. The bezel assemblies will be used to identify, instruct, or warn the operators. These tags shall be designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish.

PRESSURE GOVERNOR AND MONITORING DISPLAY

Fire Research "InControl 400" Series pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables.

Bidder Complies	
Yes	No

The control module case shall be waterproof and have dimensions not to exceed 5.50 inches high by 10.50 inches wide by 2.00 inches deep. The control knob shall be 2.00 inches in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It shall not extend more than 1.75 inches from the front of the control module. Inputs for monitored information shall be from a J1939 data bus or independent sensors. Outputs for engine control shall be on the J1939 data bus or engine specific wiring.

The dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. All LED intensity shall be automatically adjusted for day and night time operation.

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response (visual alarm only).

The program features shall be accessed via push buttons and a control knob located on the front of the control panel. There shall be a USB port located at the rear of the control module to upload future firmware enhancements.

The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator.

Bidder Complies	
Yes	No

In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

PRESSURE RELIEF VALVE

A Task Force Tips model #A18XX pressure relief valve shall be provided. The valve shall have an easy to read adjustment range from 90 to 300 PSI with 90, 125, 150, 200, 250 and 300 PSI adjustment settings and an "OFF" position. Pressure adjustments shall be made utilizing a 1/4" hex key, 9/16" socket or 14mm socket.

. The unit shall be covered by a five-year warranty. The valve shall be preset at 125 PSI (860 kPa) suction inlet pressure. The valve shall be installed inside the pump compartment where it will be easily accessible for future adjustment. The excess water shall be plumbed to the atmosphere via the unloader pipe and shall dump on the opposite side of the pump operator.

For normal pumping operations, the relief valve shall not be capped and there shall be a placard stating "DO NOT CAP" installed.

U.L. TEST PORTS

One (1) set of U.L. testing ports with plugs shall be provided on the pump panel for testing of the vacuum and pump pressures.

WATER TANK LEVEL GAUGE

A Fire Research TankVision model WLA300-A00 tank indicator kit shall be installed on the operator's panel.

The kit shall include an electronic indicator module, a pressure sensor, and a 10' sensor cable. The indicator shall show the volume of water in the tank on nine (9) easy to see super bright LEDs.

Bidder Complies	
Yes	No

A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof, manufactured of aluminum, and have a distinctive blue label.

The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, and a datalink to connect remote indicators. Low water warnings shall include flashing LEDs at 1/4 tank, down chasing LEDs when the tank is almost empty, and an output for an audio alarm.

The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted from the outside of the water tank near the bottom. No probe shall place on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors.

COMPARTMENT HEATER

A 30,000 BTU auxiliary heater shall be provided and installed inside the pump compartment. The heater shall be connected to the engine cooling system with gated valves located inside the engine compartment.
A rocker switch shall be provided in the Innovative Controls 6 position switch housing located on the operator's pump control panel.

The switch shall be labeled "COMPARTMENT HEATER"

HEAT PAN

There shall be a heat pan enclosure installed under the apparatus fire pump.

The heat pan assembly shall be fabricated of .188-inch aluminum. The top portion shall be bolted in place. The enclosure shall have two slide out trays; one on each side of the apparatus for ease of service and maintenance. The bottom trays shall be held in the place with mechanical style latch devices.

Bidder Complies	
Yes	No

PUMP COMPARTMENT TOP OVERLAY

The top of the pump compartment shall be overlaid with materials of a non-slip .125 inch embossed aluminum diamond plate, meeting the minimum NFPA standard requirements for slip resistance.

There shall be yellow reflective tape installed on the top of the pump module to meet NFPA 1901.

MIDSHIP PUMP

There shall be a Waterous 1500 GPM single stage pump, model CXSC20 with the following specifications provided and installed with the apparatus. NO EXCEPTIONS

PUMP CASING

Two-piece; vertically-split high-tensile close-grained gray iron.

IMPELLER

Bronze impeller specifically designed for the fire service, Double hub bed to eliminate axial thrust, and accurately balanced for vibration-free running. Impellers with flame-plated hubs for extreme wear resistance are optional.

WEAR RINGS

Replaceable bronze wear rings to increase pump life and keep maintenance costs at a minimum.

IMPELLER SHAFT

Stainless steel, heat treated, precisely ground to size, and polished under shaft seal. Supported by oil-lubricated ball bearings.

Bidder Complies	
Yes	No

BEARINGS

All bearings are oil or grease lubricated, ball-type, located outside the pump casting to accurately align and support the impeller shaft assembly. Bearings are deep groove type designed to carry both radial and axial thrust.

CERTIFICATION

The pump will perform and meet the following tests:

100% rated capacity @150 PSI
100% rated capacity @ 165 PSI
70% rated capacity @ 200 PSI
50% rated capacity @ 250 PSI

PUMP SEALS

The pump shall be equipped with maintenance free mechanical shaft seals that shall not require manual adjustment. The seal size, type, component materials, and housing configuration shall be specifically designed for the pump application and rated operating parameters as specified.

AIR PRIMER SYSTEM

The priming system shall be a Trident Emergency Products compressed air powered high efficiency, multi-stage, venturi-based Air Prime System.

The primer shall be mounted above the pump impeller so that the priming line will automatically drain back to the pump. The primer shall also 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.

The system shall employ an 80 PSI (5.5 bar) pressure protection valve, located on the chassis auxiliary air tank.

The primer shall be covered by a five (5) year parts warranty.

Bidder Complies	
Yes	No

6.0" STEAMER INLETS

Two (2) 6.00 inch steamer inlets shall be provided, one (1) on the left side and one (1) on the right side.

Each inlet shall have a chrome plated long handle chrome vented caps and die cast zinc screens designed to provide cathodic protection for the pump. The caps shall be National Standard Thread with long handles.

PUMP COOLING LINE

There shall be a line run from the pump to the water tank to assist in keeping the pump water from overheating. A manual 1/4 turn .25 inch on/off valve with a rectangular handle shall be supplied on the operator's panel.

PUMP ANODES

Two (2) pump anodes shall be installed in plumping system of the apparatus, to prevent damage from galvanic corrosion within the pump system. There shall be one (1) anode on the intake side and one (1) on the discharge side.

MASTER PUMP DRAIN

The pump shall be equipped with a Master Pump drain to allow draining of the lower pump cavities, volute and selected water carrying lines and accessories. The drain shall have an all brass body with a stainless-steel return spring.

The drain valve control shall be panel mounted and identified as MASTER DRAIN.

MANUAL DRAINS

All 2.0 inch or larger discharge outlets shall be equipped with a .75 inch 90° lift handle ball valve drain.

VALVES

Bidder Complies	
Yes	No

All valves shall be of a heavy-duty design capable of bi-directional flow and incorporate a self-locking ball feature and full flow optimizing characteristics that reduce the operational force required for actuation.

The valves shall be Akron 8800 series.

The valves shall be of a self-adjusting dual seat design requiring no lubrication or regular maintenance. The valve shall meet or exceed NFPA standard requirements.

PLUMBING

All plumbing and piping shall be of 304 stainless steel or flexible type piping. All inlet and outlet plumbing 3.00 inch (77 mm) and smaller shall be plumbed with either stainless steel piping or synthetic reinforced rubber hose blended with high tensile strength cord for maximum performance in tight bend applications.

Threaded, black iron or galvanized plumbing shall not be acceptable alternatives due to the difficulty of maintenance and repairs of threaded plumbing fittings.

Plumbing such as small diameter drain lines shall be stainless steel, brass or hose. Where chassis and module flexing or vibration may damage or loosen piping or where a coupling is required for servicing, the piping shall be equipped with Victaulic or rubber type couplings. NO EXCEPTIONS

All lines shall drain through the master drain valve or shall be equipped with individual drain valves. All individual drain lines for discharges shall be extended to the point where they shall drain below the chassis frame rails. All water carrying drain lines shall be of flexible polypropylene type tubing.

MANIFOLDS

Plumbing manifold bodies shall be ductile cast iron or stainless steel.
The suction inlets shall include removable die cast zinc screens designed to provide cathodic protection for the pump, therefore reducing deterioration within the pump.

Bidder Complies	
Yes	No

TANK FILL

One (1) 2.00-inch (50 mm) pump to tank fill line shall be installed from the pump directly to the booster tank.

TANK TO PUMP

One (1) 3.00-inch (77 mm) valve shall be installed between the water tank and the pump with flow recommendations as set forth by NFPA 1901, current edition, and shall be tested to those standards when the pump is being certified.

TANK TO PUMP CHECK VALVE

There shall be a tank to pump check valve, conforming to NFPA standard requirements to prevent water from back flowing at an excessive rate if the pump is being supplied from a pressurized source.

The check valve shall be mounted as an integral part of the pump suction extension. A hole up to .25 inch (6.35 mm) is allowable in the check valve to release steam or other pressure buildup so that the void between the vale and check valve may drain of water that could be subject to freezing.

2.5" LEFT SIDE INLET

There shall be one (1) 2.50-inch (65 mm) gated suction inlet with .75-inch (19 mm) bleeder installed on the left side of the apparatus.

INTAKE PLUMBING

The plumbing shall consist of 2.50-inch (65 mm) piping, and shall incorporate a manual drain control installed below the pump area for ease of access.

INTAKE TERMINATION

The termination shall include the following components:

Bidder Complies	
Yes	No

One (1) 2.50-inch (65 mm) NST swivel female straight adapter with screen

One (1) 2.50 inch (65 mm) self-venting plug, secured by a cable

2.5" LEFT SIDE DISCHARGE

There shall be a 2.50 inch (65 mm) gated discharge installed on the left side of the apparatus.

SIDE DISCHARGE PLUMBING

The plumbing shall consist of 2.50-inch (65 mm) piping, and shall incorporate a manual drain control installed below the pump area for ease of access.

DISCHARGE TERMINATION

The discharge termination shall include the following components:

One (1) 2.50 inch (65 mm) Male NST adapter

One (1) 2.50-inch (65 mm) NST female swivel by male with 45-degree polished elbow

One (1) 2.50 inch (65 mm) female self-venting cap, secured by a cable

2.5" RIGHT SIDE DISCHARGE

There shall be one (1) 2.50 inch (65 mm) gated discharge installed on the right side of the apparatus.

SIDE DISCHARGE PLUMBING

The plumbing shall consist of 2.50-inch (65 mm) piping, and shall incorporate a manual drain control installed below the pump area for ease of access.

DISCHARGE TERMINATION

The discharge termination shall include the following components:

One (1) 2.50 inch (65 mm) Male NST adapter

One (1) 2.50-inch (65 mm) NST female swivel by male with 45-degree polished elbow

One (1) 2.50 inch (65 mm) female self-venting cap, secured by a cable

3.0" RIGHT SIDE DISCHARGE

There shall be one (1) gated 3.00-inch (77 mm) discharge installed on the right side of the apparatus.

SIDE DISCHARGE PLUMBING

The plumbing shall consist of 3.00-inch (77 mm) piping, and shall incorporate a manual drain control installed below the pump area for ease of access.

DISCHARGE TERMINATION

The discharge termination shall include the following components:

One (1) 3.00-inch (77 mm) NST Straight adapter

One (1) 3.00-inch (77 mm) NST female by 4.00-inch (100 mm) Storz with 30-degree elbow

One (1) 4.00-inch (100 mm) Storz cap, secured by a cable

2.5" RIGHT REAR DISCHARGE

There shall be one (1) 2.50-inch (65 mm) discharge located on the right side at the rear of the vehicle.

REAR DISCHARGE PLUMBING

The plumbing shall consist of 2.50-inch (65 mm) piping, and shall incorporate a manual drain control installed below the pump area for ease of access.

Bidder Complies	
Yes	No

DISCHARGE TERMINATION

The discharge termination shall include the following components:

One (1) 2.50 inch (65 mm) Male NST adapter

One (1) 2.50-inch (65 mm) NST female swivel by male with 45-degree polished elbow

One (1) 2.50 inch (65 mm) female self-venting cap, secured by a cable

3.0" DECK GUN DISCHARGE

There shall be a 3.00-inch (77 mm) deck gun discharge provided.

DECK GUN PIPING

The deluge waterway shall be plumbed with 3.00-inch (77 mm) piping that terminates in the center location at the top of the pump compartment module.

The plumbing shall be drained with an auto-drain located at the lowest point of the waterway plumbing if required.

EXTEND-A-GUN

There will be a Task Force Tips 18.00 inch (457 mm) manual Extenda-Gun installed on the deluge pipe.

If the Extenda-Gun is not properly stowed and the transmission is placed into drive or reverse mode with the parking brake released, it shall activate the hazard light in the cab to alert the crew. The customer will provide their own Deluge monitor and nozzle.

PUMP COMPARTMENT SPEEDLAYS

Bidder Complies	
Yes	No

Two (2) 1.75 inch (45 mm) vertically stacked speedlays shall be installed in the front of the pump compartment module, under the top control panel.

The outside edges of each side speedlay opening shall be trimmed for a pleasing appearance.

There shall be a cutout on the front face of the pump compartment to access each speedlay hose storage area.

SPEEDLAY CAPACITY

The speedlays shall each have capacity for 200 foot of 1.75 inch (45 mm) double jacket fire hose.

DISCHARGE PLUMBING

The plumbing shall consist of 2.00-inch (50 mm) piping, and shall incorporate a manual drain control installed below the pump area for ease of access.

DISCHARGE TERMINATION

The discharge termination shall include the following components:

One (1) 2.00-inch (50 mm) NPT x 1.50 inch (38 mm) NST chrome chicsan swivel

The use of a swivel shall allow hose payout to either side of the pump compartment.

Both speedlay discharges shall be foam capable.

SPEEDLAY COVER

A fixed .125-inch (3.18 mm) aluminum diamond plate speedlay cover shall be provided at the top of the speedlay area.

Bidder Complies	
Yes	No

The sides of the speedlay bay openings shall have a vinyl cover installed. Each cover shall be held in place by Velcro on two (2) sides. A nylon grab strap shall be provided on the bottom of each side cover for quick access.

SPEEDLAY COVER COLOR

The speedlay hose bed covers shall be red in color.

FRONT BUMPER DISCHARGE

One (1) 1.50 inch (38 mm) front bumper discharge outlet shall be provided.

FRONT BUMPER DISCHARGE PLUMBING

The front bumper discharge plumbing shall consist of 2.00-inch (50 mm) piping, and shall incorporate a manual drain control installed below the pump area for ease of access.

Auto-drain(s) shall be installed in the discharge piping at the lowest point of the plumbed system.

FRONT BUMPER DISCHARGE TERMINATION

The discharge termination shall include the following components:

One (1) 2.0-inch (50 mm) NPT x 1.50-inch (38 mm) NST polished stainless steel chicsan swivel. The use of a swivel shall allow hose payout to either side of the apparatus.

The front bumper discharge shall be mounted on top of the gravel shield of the front bumper extension. The discharge shall be placed to the right of the hose well.

The front bumper discharge shall be foam capable.

DISCHARGE GAUGES

An Innovative Controls 2.50-inch (65 mm) gauge shall be supplied for reading

Bidder Complies	
Yes	No

the pressure of each discharge greater than 1.50 inches (38 mm) in diameter, unless otherwise specified.

GAUGE SCALE

Each gauge shall be marked for reading a discharge pressure of 0-400 PSI.

GAUGE FACE COLOR

Each gauge shall have black markings on a white face.

BEZELS FOR 2.5" DISCHARGE GAUGES

There shall be an Innnovative Controls deluxe bezel supplied around each of the 2.50-inch (65 mm) discharge pressure gauges. The bezels shall be constructed from chrome-plated zinc with large, easily identifiable recessed labels for color-coding and verbiage.

FOAMPRO 1600

The apparatus shall be equipped with an electronic, fully automatic, variable speed, direct injection, and discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrate. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. System must be capable of delivering accuracy to within 5% of calibrated settings over the advertised operation range when installed according to factory standards.

The system shall be equipped with a control module suitable for installation on the pump panel. Incorporated within the motor driver shall be a microprocessor that receives input from the system flowmeter, while also monitoring foam concentrate pump output. This compares values to ensure that the operator's preset is proportional to the amount of foam concentrate injected into the discharge side of the fire pump.

A paddlewheel-type flowmeter shall be installed in the discharge system specified to be "foam capable." The flow meter shall be mounted in a manifold providing accurate water flow readings from 20-750 gpm and operate up to

Bidder Complies	
Yes	No

900 gpm. A simulated flow feature shall be incorporated into the motor driver to simulate an approximate flow value of 100 gpm. This feature is to be engaged or disengaged with a momentary switch and will automatically disengage when the main system switch is turned off.

The control module shall enable the pump operator to:
Activate the foam proportioning system
Select proportioning rates from 0.1% to 1.0%
See a "low concentrate" warning light flash when the foam tank runs low. In two minutes, if foam concentrate is not added to the tank, shut the foam concentrate pump down.

A 12-volt electric motor driven positive displacement plunger pump shall be provided. The pump capacity shall be from 0.1 gpm (0.38 L/min) to 1.7 gpm (6.4 L/min) at 200 psi (13.8 BAR) with a maximum operating pressure up to 400 psi (27.6 BAR). The pump shall have the capability to draw 3 feet of lift. The system will draw a maximum of 30 amps @ 12 VDC. The motor shall be controlled by the microprocessor (mounted to the base of the pump). It shall receive signals from the control module and power the 1/3 hp (.25 Kw) electric motor in a variable speed duty cycle to ensure that the correct proportion of concentrate is injected into the water stream. A full flow check valve shall be provided in the discharge piping to prevent foam contamination of fire pump and water tank. A 12 psi (.83 BAR) opening pressure check valve shall be provided in concentrate line.

Components of the complete proportioning system as described above shall include:

Operator control module
Paddlewheel flowmeter
Pump and electric motor/motor driver
Wiring harnesses
Low level tank switch
Foam injection check valve
Main waterway check valve

FOAM SYSTEM TESTING

Bidder Complies	
Yes	No

The apparatus foam system shall be tested and the Water Flow meter shall be certified by the manufacturer prior to delivery.

FOAM TANK

One (1) 20-gallon foam tank with square hinged lids, equipped with a hold down devices shall be installed and plumbed with non-corrosive piping to the foam system. The fill towers shall be approximately 8.00 inch by 8.00 inch.

A label shall be affixed to the foam tank fill indicating: "WARNING" Class A (or B) foam tank fill, do not mix brands or types of foam.

Foam tank shall be integral with the booster water tank provided for future foam operations, if desired.

SYSTEM PLUMBED TO 1 TANK

The system shall be supplied by a single foam tank. There shall be a 1/4 turn valve located at the tank for serviceability.

SINGLE 1" TANK DRAIN

There shall be a 1.00-inch quarter turn drain valve installed for drainage of the foam tank. The valve shall be installed in the pump house with a drain line extended to the side running board.

An additional 1" quarter turn drain valve shall be installed at the outlet of the foam tank port to allow for service of the foam system without having to drain the foam tank.

FOAM TANK LEVEL GAUGE

Fire Research TankVision Pro model WLA360-A00 tank indicator kit shall be installed. The kit shall include an electronic indicator module, a pressure sensor, a 20' sensor cable and a tank vent.

Bidder Complies	
Yes	No

The indicator shall show the volume of Class A foam concentrate in the tank on nine (9) easy to see super bright RGB LEDs. A wide view lens over the LEDs shall provide for a viewing angle of 180 degrees. The indicator case shall be waterproof, manufactured of Polycarbonate/Nylon material, and have a distinctive green label.

The program features shall be accessed from the front of the indicator module. The program shall support self-diagnostics capabilities, self-calibration, six (6) programmable colored light patterns to display tank volume, adjustable brightness control levels and a datalink to connect remote indicators. Low water warnings shall include flashing LEDs at 1/4 tank, down chasing LEDs when the tank is almost empty, and an output for an audio alarm.

The indicator shall receive an input signal from an electronic pressure sensor. The sensor shall be mounted from the outside of the foam tank near the bottom. No probe shall be placed on the interior of the tank. Wiring shall be weather resistant and have automotive type plug-in connectors.

BODY MOUNTING SYSTEM

The entire body module assembly shall be mounted to the chassis frame rails exclusively with torsion isolator assemblies to reduce the vibration and stress providing an extremely durable body mount.

The body substructure shall be mounted above the frame to allow independent flexing to occur between the body and the chassis. Two (2) assemblies shall be mounted to the chassis frame rails with steel, gusseted mounting brackets. Each bracket shall be painted for corrosion resistance. Each body mount bracket shall be mounted to the side chassis frame flange with two 5/8"-UNC Grade 5 HHCS.

The rear assemblies shall have a two-part rubber vibration isolator. Certain assemblies shall also incorporate a torsion spring. Helical coil springs shall be incorporated into specific mounts in tandem with the rubber isolators to minimize the stress absorbed by the body caused from chassis frame rail flexing.

Bidder Complies	
Yes	No

Because of the constant vibration and twisting action that occurs in chassis frame rails and suspension, the torsion mounting system is required to minimize the possibility of premature body structural failure.

The body mounting system shall have a lifetime warranty. A complete copy of the warranty shall be provided with each proposal.

COMPARTMENT VENTILATION

To allow for proper air circulation and flow, each compartment shall have a venting route. The venting locations shall be determined by "best-fit" locations for each body style configuration. The vents will be a chrome louvered and mounted appropriately on the compartment interior walls.

COMPARTMENTATION

The following compartments shall be supplied on the apparatus:

Compartment "L1"

There shall be one (1) full height compartment ahead of the rear wheels on the left side of the apparatus with interior dimensions of the following:

The upper portion shall be approximately 49.75 inches wide by 39.00 inches (990.60 mm) high by 12.50 inches deep.

The lower portion shall be approximately 49.75 inches wide by 33.00 inches (838.20 mm) high by 26.00 inches deep.

Compartment "L2"

There shall be one (1) compartment over the rear wheels on the left side of the apparatus with interior dimensions of the following:

The upper portion shall be approximately 68.00 inches wide by 39.00 inches (990.60 mm) high by 12.50 inches deep.

Bidder Complies	
Yes	No

The lower portion shall be approximately 68.00 inches wide by 8.00 inches (203.20 mm) high by 26.00 inches (660.40 mm) deep.

Compartment "L3"

There shall be one (1) full height compartment behind the rear wheels on the left side of the apparatus with interior dimensions of the following:

The upper portion shall be approximately 46.75 inches wide by 39.00 inches (990.60 mm) high by 12.50 inches deep.

The lower portion shall be approximately 46.75 inches wide by 33.00 inches (838.20 mm) high by 26.00 inches (660.40 mm) deep.

Compartment "R1"

There shall be one (1) full height compartment ahead of the rear wheels on the right side of the apparatus with interior dimensions of the following:

The upper portion shall be approximately 49.75 inches wide by 39.00 inches (high by 12.50 inches deep.

The lower portion shall be approximately 49.75 inches wide by 33.00 inches high by 26.00 inches deep.

Compartment "R2"

There shall be one (1) compartment over the rear wheels on the right side of the apparatus with interior dimensions of the following:

The upper portion shall be approximately 68.00 inches wide by 39.00 inches (990.60 mm) high by 12.50 inches deep.

The lower portion shall be approximately 68.00 inches wide by 8.00 inches (203.20 mm) high by 26.00 inches (660.40 mm) deep.

Bidder Complies	
Yes	No

Compartment "R3"

There shall be one (1) full height compartment behind the rear wheels on the right side of the apparatus with interior dimensions of the following:

The upper portion shall be approximately 46.75 inches wide by 39.00 inches (990.60 mm) high by 12.50 inches deep.

The lower portion shall be approximately 46.75 inches wide by 33.00 inches (838.20 mm) high by 26.00 inches deep.

FORMED BODY DESIGN CONSTRUCTION

The apparatus body shall be a formed heat metal design, which serves as the compartment enclosures and supporting substructure of the body. The substructure and enclosures shall work in unison to provide maximum storage that supports and protect the contents contained within.

BODY CONSTRUCTION

The body substructure and compartments shall utilize a combination of huck-bolting and welding methods.

The huck-bolt systems utilized in either body or substructure shall be stainless steel fasteners for maximum shear and tension strength. Other system of fasteners that do not consist of stainless steel shall NOT be acceptable.

In combination with the huck-bolt system, strictly monitored welding procedures shall be instituted. To ensure maximum joint strength, any welding zones shall be welded together utilizing American Welding Standard (A.W.S), Certified welding procedures.

Due to the engineered combination of specifically chosen materials, no dissimilar metals shall be used in the body and its supporting substructure without being separated by a sufficient corrosion and electrolysis inhibitor. This shall consist of isolation pads and structural adhesives.

Bidder Complies	
Yes	No

Absolutely no dissimilar metals shall be used in the body and its supporting substructure without being separated by Eck®, which prevents corrosion by providing a barrier between dissimilar metals, sealing out moisture and absorbing energy created by a dissimilar metal reaction.

BODY STRUCTURE

The supporting tank and compartment substructure shall be manufactured from corrosion resistant 3CR12 stainless steel material. The supporting material shall be engineered from stainless steel material to provide both high strength and corrosion resistance for longevity of the apparatus body. The use of black carbon steel materials that have been painted or coated to try to prevent corrosion shall not be expectable. NO EXCEPTION

BODY COMPARTMENTS

The formed sheet metal compartments shall utilize a 0.125 inch thick 5052-H32 aluminum alloy to provide maximum strength and durability. Each compartment sheet and enclosure shall be fabricated in a manor to provide proper sheet alignment and weld location application. The body shall consist of multiple pre-engineered compartment assemblies that shall be combined to create a series of body combinations. In the event of body damage, these assemblies shall allow for easier disassembly and assembly through the use of common tools and materials.

COMPARTMENT TOPS AND EXTERIOR HOSE BED WALL

The exterior compartment tops and outer hose bed walls shall consist of .125 inch embossed aluminum diamond plate material to provide both strength and pleasing appearance. The hose bed walls shall be embossed aluminum diamond plate to the outward face while incorporating an additional smooth aluminum interior wall sheet to form the hose bed area. The use of interior and exterior hose bed wall sheets shall provide an enclosed section for strength integrity, wire routing, etc. Single hose bed wall sheet construction shall NOT be acceptable.

Bidder Complies	
Yes	No

COMPARTMENT FLOORS

The body compartments shall be enclosed with aluminum sheet metal as specified above. The compartment floors shall have a 1.00 inch lip downward at the door opening side of the compartment. This lip shall integrate with a structural member on the bottom edge and form a "sweep-out" compartment. This design shall also allow for a structural flush fitting door frame and a complete door/weather seal.

COMPARTMENT LOAD CAPACITY

Each compartment shall have a minimum of one additional structural compartment floor support hat section centered on the underside of the compartment floor. This additional member shall be integral with compartment assemblies of each area.

FINITE ELEMENT ANALYSIS

The proposed body design must have completed a review and analysis by an external engineering consultant. At a minimum, the consultant must have conducted a computer modeled finite element analysis of the proposed design. The analysis is to include real world working load scenarios.

Analysis to cover both static and dynamic situations must be completed. The purpose of the finite element analysis is to ensure proper design of the apparatus body, and that it is capable of carrying the typical fire apparatus loads and those specified by NFPA for equipment.

REAR COMPARTMENT

The following compartment shall be supplied on the apparatus:

Compartment "B1":

There shall be one (1) compartment installed at the rear of the apparatus with a R·O·M Series IV roll up door.

Bidder Complies	
Yes	No

The interior dimensions of this compartment shall be approximately 41.00 inches wide by 39.00 inches high by 33.00 inches deep.

DOOR OPEN INDICATOR

The rear compartment roll-up door shall have an integral door open indicator magnet in the lift bar. If the bar is not properly closed and the transmission is placed into drive or reverse mode with the parking brake released, it shall activate the hazard light in the cab to alert the crew.

ROLL-UP DOOR CONSTRUCTION

All horizontal and vertical side compartment doors shall be roll-up style doors.

SIDE AND REAR COMPARTMENT DOOR

A R•O•M Corporation Series IV roll-up shutter door shall be installed. Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

Shutter slats shall feature a double wall extrusion 0.315 inches thick with a concave interior surface to minimize loose equipment jamming the shutter door closed.
Shutter door shall have an enclosed counter balance system. Counter balance system shall be 4.00 inches in diameter and held in place by 2 heavy duty 18-gauge zinc plated plates. Counter balance system shall have 2 over-molded rubber guide wheels to provide a smooth transition from vertical track to counter balance system.

SATIN ALUMINUM FINISH

The rollup doors shall have a satin aluminum finish.

ROLL-UP DOOR ASSIST SYSTEM

There shall be nylon straps installed on the both left and right body sides, 'high side' compartment doors, to assist in closing the door.

The strap shall be attached to each door and shall be permanently mounted to the rearward wall with footman loops, half way between the top and bottom of the compartment.

DOOR OPEN INDICATOR

Each roll up door shall have an integral door open indicator magnet in the lift bar.

If the bar is not properly closed and the transmission is placed into drive or reverse mode with the parking brake released, it shall activate the hazard light in the cab to alert the crew.

COMPARTMENT LIGHTING

Two (2) OnScene Access LED strip lights shall be installed in each body compartment.

The tube lights shall be centered vertically along each side of the door framing and shall be maximum length available to fit the opening.

The lights in each compartment shall be on a separate circuit, turning on only those lights that have open compartment doors.

HOSE STORAGE

A hose bed shall be provided that meets the minimum NFPA storage requirements. The hose bed shall have slotted .25inch aluminum flooring installed to allow drainage through the tank cavity to the ground below.

The aluminum flooring shall be manufactured in discrete sections to allow for easy removal and outstanding stability. The area shall be free of sharp edges to protect the hose when loaded or distributed.

HOSE BED WALL FINISH NATURAL

The apparatus hose bed interior side walls shall be of a Natural unpainted metal finish.

Bidder Complies	
Yes	No

HOSE BED DIVIDER WITH HAND CUTOUT

There shall be a full height adjustable hose bed divider provided and installed in the hose bed area of the apparatus body.

The divider shall be fabricated of .25 inch thick aluminum plate with a double-sided reinforcement and attached to the adjustable slide rails. The rear of the divider shall have a radius to provide a smooth corner and a hand cut out to aid in access to the hose bed area. Hose payout shall be unobstructed by the divider.

There shall be a total of two (2) provided and installed in the hose bed.

HOSE BED RISER

A 15.00 inches hose bed riser made from the same material as the body shall be provided in order to increase the hose bed capacity.

CATWALKS

Catwalks shall be provided over the top of the compartments. The catwalks shall be overlaid with .125 inch embossed aluminum diamond plate material approved by the latest NFPA standards for abrasiveness.

The outboard edge shall be bent downward at a 90-degree angle and over the compartments on both sides.

Catwalks shall not be an approved stepping surface, "Do not walk" labels to be installed

LED HOSE BED FLOOD LIGHT

There shall be a full width OnScene "Access" LED tube light provided and installed on the hose bed dunnage wall. The tube light shall be mounted at the top to illuminate into the hose bed.

Bidder Complies	
Yes	No

HOSE BED LIGHT ACTIVATION

The hose bed light(s) shall be activated by a switch on the operator's panel.

DUNNAGE AREA

A vertical bulkhead shall be installed at the front of the hose bed area, just behind the water tank fill tower forming a storage area that is separated from the hose bed. The rear face of the bulkhead shall serve as a mounting surface for the hose bed dividers, resulting in the ability to move any hose bed divider across the entire width of the hose bed.

There shall be one (1) dunnage area divider installed running from the forward portion of the dunnage area towards the rear portion of the dunnage area. This divider will keep the fill tower and foam tank in a separate dunnage area than the generator.

UPF POLY TANK III

The booster tank shall be constructed of PT3™ polypropylene material. This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. The booster and/or foam tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments.

All 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 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, current

Bidder Complies	
Yes	No

edition. 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 .125 on all dimensions.

WATER FILL TOWER AND COVER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of .50-inch (12.7 mm) PT3™ polypropylene. 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 .25 inch (6.4 mm) 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.
The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I. D. of 4.00 inch (100 mm) that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901, current edition, so as to not interfere with rear tire traction.

The tank cover shall be constructed of .50 inch (12.7 mm) thick PT3™ polypropylene and 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 2.00 inch (50 mm) minimum polypropylene dowels spaced a maximum of 40.00 inch (1016 mm) 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.

MOUNTING

The UPF Poly-Tank® III shall rest on the body cross members in conjunction with such additional cross members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. The tank must be isolated from the cross members through the use of hard rubber

Bidder Complies	
Yes	No

strips with a minimum thickness and width dimension of .25-inch x 1.00 inch and a Shore A Hardness of approximately 60 durometer. The rubber must be installed so it will not become dislodged during normal operation of the vehicle. Additionally, the tank must be supported around the entire bottom outside perimeter and captured both in the front and rear as well as side to side to prevent tank from shifting during vehicle operation.

A picture frame type cradle mount with a minimum of 2.00 inch x 2.00 inch x .25 inch stainless steel, angle shall be provided or the use of corner angles having a minimum dimension of 4.00 inch x 4.00 inch x 4.00 inch by 6.00 inch (150 mm) high are permitted for the purpose of capturing the tank.

Tank top must be capable of supporting loads up to 200 lbs. per sq. foot when evenly distributed. Other equipment such as generators, portable pumps, etc. must not be mounted directly to the tank top unless provisions have been designed into the Poly-Tank® III for that purpose.
The tank shall be completely removable without disturbing or dismantling the apparatus structure.

TANK TAG

A tag shall be provided with the apparatus paperwork and 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 CAPACITY

The tank shall be 1000 gallons in capacity.

FILL TOWER

The fill opening shall be approximately 13.00 inches x 12.00 inches.The tower will have) thick removable poly material screen and hinged type cover that will open if the tank is filled at an excess rate.

The fill tower shall have a 6.00-inch overflow that will discharge underneath the tank, behind the rear wheels. The overflow shall terminate above the tank water level when filled to the rated capacity.

DIRECT TANK FILL

There shall be one (1) external direct tank fill port installed on the rear of the apparatus.

DIRECT TANK FILL VALVE & PIPING

A 2.50-inch Akron Brass 8000 series swing-out valve with stainless steel ball shall be provided for the direct tank fill.

The valve shall be controlled with a 'swing-type' lever directly attached to the valve. The lever shall operate just over 90 degrees of travel to provide full open/full closed positioning of the valve.

The plumbing shall consist of 2.50-inch piping, and shall incorporate a manual drain control installed below the pump area for ease of access.

The valve is to be painted job color red.

DIRECT TANK FILL TERMINATION

The direct tank fill shall termination shall include the following components:

One (1) 2.50 inch (65.00 mm) NST female adapter

One (1) 2.50 inch (65.00 mm) NST male by female swivel 30 degree elbow

One (1) 2.50 inch (65.00 mm) NST male self-venting cap, secured by a cable to the outlet termination location.

Bidder Complies	
Yes	No

DIRECT TANK FILL LOCATION

The direct tank fill shall be located on the left rear of the apparatus.

LADDER STORAGE

The ground ladders and two (2) pike poles shall be stored within a compartment installed on the right side of the apparatus booster tank, with ladders lying on their side.

All items shall be stored in their own independent section to allow one item to be removed without disturbing another.

The compartment and door shall be fabricated of .125 inch (3.18 mm) smooth aluminum and will have chevron applied to match the rear body.

The door shall be vertically hinged and provided with two push button style latches and a chrome handle centered between the push button latches.

If the door is not properly closed and the transmission is placed into drive or reverse mode with the parking brake released, it shall activate the hazard light in the cab to alert the crew.

GROUND LADDERS

The following ground ladders shall be provided by the manufacturer:

-One (1) Duo-Safety 24-foot (7 m) two (2) section aluminum extension ladder, model 900A.

-One (1) Duo-Safety 14-foot (4 m) aluminum roof ladder with folding hooks, model 775A.

-One (1) Duo-Safety 10-foot (3 m) aluminum attic ladder, model 585A.

Bidder Complies	
Yes	No

PIKE POLES

The following pike poles shall be provided by the manufacturer:

There shall be one (1) Duo-Safety 12-foot (3.5 m) pike pole with a fiberglass handle provided with the apparatus.

There shall be a one (1) Duo-Safety 10-foot (3 m) pike pole with a fiberglass handle provided with the apparatus.

REAR ACCESSIBLE SUCTION HOSE AREA STORAGE

There shall be a suction hose storage compartment installed on the left side, rear of the apparatus body.

The compartment shall extend into the body area of the apparatus and shall be fabricated to an approximate length of 144.00 inches long and accommodate two (2) vertically stacked suction hose with barrel strainer and two (2) pike pole storage tubes.

The compartment and door shall be fabricated of .125 inch smooth aluminum and will have chevron applied to match the rear body.

The door shall be vertically hinged and provided with two push button style latches and a chrome handle centered between the push button latches.

If the door is not properly closed and the transmission is placed into drive or reverse mode with the parking brake released, it shall activate the hazard light in the cab to alert the crew.

Hard suction hose shall be provided by the Fire Department.

BODY OVERLAYS – FRONT/REAR

The entire front face of the apparatus body shall have aluminum diamond plate overlays installed. The entire rear face of the apparatus body shall have raw aluminum overlays installed for the installation of chevron striping.

Bidder Complies	
Yes	No

All overlay materials shall be coated with 3M adhesive sealant on the back portion to provide an insulating barrier between dissimilar metals.

SCBA COMPARMENT BIN

There shall be an eight (8) place air bottle compartment bin provided in the lower portion of the compartment located above the wheel well area on the left side in the L-2 compartment.

The interior surface of each SCBA storage tube shall be lined with a coating of gray spray-on bed liner. The application of spray-on bed liner shall aid to minimize any damage caused to the cylinders while stored in the holders.

OVERWHEEL SHELVING

One (1) shelf 66.00-inch-wide x 12.50-inch-deep x 2.00-inch-high shall be provided in the wheel well compartment as part of the assembly.

The shelf shall be .19-inch smooth aluminum with a formed 2.00-inch lip on the front and back. The side mounting brackets shall be integral with the shelving to form the sides.

WHEEL WELL ROLL-OUT DRAWER

There shall be a roll-out drawer installed in the compartment located above the rear wheel on the right side of the body in the R-2 compartment. The slide assemblies shall incorporate cadmium plated ball bearing roller slides and a lock-in, lock-out front drawer release system (FDR).

The drawer shall be approximately 25.00-inch deep by 63.00-inch-wide and have a 220.00 pound capacity.

OVERWHEEL SHELVING

One (1) shelf 66.00 inch (1676.40 mm) wide x 12.50 inch deep x 2.00 inch high shall be provided in the wheel well compartment as part of the assembly.

The shelf shall be .19 inch smooth aluminum with a formed 2.00 inch lip on the

Bidder Complies	
Yes	No

front and back. The side mounting brackets shall be integral with the shelving to form the sides.

COMPARTMENT UNISTRUT

Vertically mounted Unistrut shall be installed in ALL compartments of the apparatus body to accommodate mounting shelves, trays, and other miscellaneous equipment items as specified.

COMPARTMENT UNISTRUT

Two (2) horizontally mounted Unistrut tracks shall be provided on the back wall in the each over wheel compartment.

SHELVING

The shelving shall be made out of .190 inch smooth aluminum sheet material with a formed 2 inch lip on the front and back.

The side mounting brackets shall be integral with the shelving to form the sides. The shelving shall be vertically adjustable.

The following shelving shall be provided:

UPPER HALF DEPTH SHELVING

A full width x half depth shelf shall be provided and installed in the upper compartment(s) specified.

There shall be a total quantity of four (4) provided.

One (1) shall be located in the L-1 compartment.

One (1) shall be located in the L-3 compartment.

One (1) shall be located in the R-1 compartment.

One (1) shall be located in the R-3 compartment.

Bidder Complies	
Yes	No

ROLL OUT TRAY(S)

Each tray shall be fabricated of .190 inch thick 3003 grade or higher aluminum sheet material with four (4) 3.00 inch side flanges, corner welded for maximum strength and shall be as wide and as deep as compartment allows.

Each tray shall be secured to an Austin Hardware 24.00 inch) long ball bearing "heavy duty" slide assembly. The slide assemblies shall incorporate cadmium plated ball bearing roller slides and a lock-in, lock-out front drawer release system (FDR).

The tray shall have a 300# capacity and 100% extension.

The following shall be supplied:

FLOOR MOUNT ROLL-OUT TRAY(S)

A full width floor mount slide-out tray shall be secured to an Austin Hardware 24.00 inch (609.60 mm) long ball bearing "heavy duty" slide assembly.

The slide assemblies shall incorporate cadmium plated ball bearing roller slides and a lock-in, lock-out front drawer release system (FDR).

The tray shall have a 300# capacity and 100% extension.

The roll-out system shall be bolted to the compartment floor for rigid and sturdy mounting to the compartment floor.

There shall be a total quantity of two (2) provided.

One (1) floor mount roll-out tray shall be located in the L-1 compartment.

One (1) floor mount roll-out tray shall be located in the R-1 compartment.

Bidder Complies	
Yes	No

FLOOR MOUNTED ROLL OUT TRAY REAR COMPARTMENT

One (1) full width floor mount slide out tray shall be secured to an Austin Hardware 28.00 inch long ball bearing "heavy duty" slide assembly. The slide assemblies shall incorporate cadmium plated ball bearing roller slides and a lock-in, lock-out front drawer release system (FDR).

The tray shall have a 300# capacity and 100% extension.

The roll-out system shall be bolted to the compartment floor for rigid and sturdy mounting to the compartment floor.

WALL MOUNTED TOOL BOARD/ALUMINUM

An aluminum tool board(s) with DA finish shall be installed to the back wall of the compartment as specified. The tool board(s) shall be mounted directly to unistrut material attached to the upper back wall.

Locate one (1) in the L-2 and R-2 compartments. Dealer provided and installed

PROTECTIVE MATTING

There shall be VersaFlex protective matting provided and installed for a pleasing appearance and durability on all specified compartment shelves and roll-out trays.

PROTECTIVE MATTING COLOR

The matting shall be black in color.

WHEEL WELL PANELS

The body panel area around the wheel well on each side of the body shall be painted the same color as the rest of the body

Bidder Complies	
Yes	No

SIDE RUB RAILS

The bottom edge of the compartments and pump house running boards shall be protected with rub rails to absorb minor damage while protecting the body. The rub rails shall run to the rear of the tailboard.

The rub rails shall be fabricated of brightly anodized aluminum channel. The rub rails shall be bolted in place with stainless steel bolts and shall be spaced away from the body with .50-inch nylon spacers to help prevent the collection of water and debris. Each rub rail section shall be easily removable and replaced should it become damaged.

REAR RUB RAILS

The rearward edge of the rear step shall be trimmed with rub rails to absorb minor damage while protecting the body.

The rub rails shall be fabricated of brightly anodized aluminum channel. The rub rails shall be bolted in place with stainless steel bolts and shall be spaced away from the body with .50-inch nylon spacers to help prevent the collection of water and debris. Each rub rail section shall be easily removable and replaced should it become damaged.

RUB RAIL RETRO-REFLECTIVE STRIPING

One-inch retro-reflective Diamond Grade striping shall be applied to the length of each rub rail section making the perimeter of the apparatus more readily visible.

STRIPE COLOR

The reflective striping shall be red in color.

DOOR SILL TRIM PLATES

Brushed stainless steel door sill plates shall be installed at the bottom of each body compartment door opening.

Bidder Complies	
Yes	No

VERTICAL OVERLAY TRIM PLATES

Full height brushed stainless steel vertical overlay trim plates shall be installed on the outer front and rear corners of the body compartment.

FENDERETTES

Two (2) polished aluminum fenderettes shall be provided and installed on body rear wheel well openings, one (1) each side. Rubber welting shall be provided between the body and the crown to seal the seam and restrict moisture from entering. A dielectric barrier shall be provided between the fender crown fasteners (screws) and the fender sheet metal to resist deterioration.

REAR TAILBOARD

The rear tailboard shall be fabricated of the same materials as used in the apparatus body. The tailboard shall be an independent assembly fastened to the rear body structural framing to provide body protection and a solid rear stepping platform.

The rear of the apparatus body shall be vertical in design - otherwise known as a 'flat-back'. On the rear body surface, a sign shall be attached that states: "DO NOT RIDE ON REAR STEP, DEATH OR SERIOUS INJURY MAY RESULT."

The rear tailboard and body shall be constructed such that the angle of departure shall be no less than 8 degrees at the rear of the apparatus when fully loaded (Per NFPA 1901, current edition).

REAR TAILBOARD STEP

The rear tailboard shall be approximately 13.50 inches (342.90 mm) deep and shall incorporate a .125 inch (3.18 mm) embossed aluminum diamond plate overlay.

The stepping area shall span the width of the apparatus, overlapping the perimeter of the structural tailboard framework.

Bidder Complies	
Yes	No

The embossed diamond plate material shall meet the minimum NFPA standard requirements for slip resistance.

INTERMEDIATE REAR STEP

One (1) upper rear fixed intermediate step approximately 39-inch-wide x 10.00-inch-deep shall be provided above the rear compartment to be used as a stepping area when loading or deploying hose.

The step shall be designed with integrated grab handles and hand holes.

The step shall be fabricated of embossed aluminum diamond plate material and mounted on the flat back of the apparatus with gusset-type mounting.

The step shall extend from ladder compartment to the suction hose compartment and shall protect the rear discharge and rear direct tank fill.

INTERMEDIATE STEP LIGHTING

Sufficient lighting light shall be installed to illuminate the stepping areas as provided.

There shall be two (2) Whelen "OS" lights installed above the stepping surface.

There shall be an On-Scene Access 38" LED tube light installed below the intermediate step to illuminate below the step.

STEP LIGHT ACTIVATION

The step lights shall be activated when the park brake is set.

FOLDING STEP

Innovative Control illuminated folding step(s) shall be installed on the body as directed by the department or required per NFPA. The top of the stepping surface shall have a knurled finish and an LED light that illuminates the stepping surface. An additional light shall be provided on the step mounting bracket to

Bidder Complies	
Yes	No

illuminate the area under the step.

The following steps shall be installed:

ILLUMINATED FOLDING STEPS

Three (3) illuminated folding steps shall be installed on the left front vertical face of the body.

STEP LIGHT ACTIVATION

The step lights shall be activated when the park brake is set.

10" HANDRAILS

One (1) 10.00 inches long by 1.25-inch diameter handrail constructed of knurled aluminum tubing shall be installed in a best fit location above the forward step(s) to assist in climbing the steps according to NFPA 1901, current edition. There shall be a 2.00-inch minimum clearance between the bracket and the body.

Location: Front edge of catwalk, angled at approximately 30 degrees.

ILLUMINATED FOLDING STEPS

Three (3) illuminated folding steps shall be installed on the right front vertical face of the body.

STEP LIGHT ACTIVATION

The step lights shall be activated when the park brake is set.

10" HANDRAILS

One (1) 10.00 inches long by 1.25-inch diameter handrail constructed of knurled aluminum tubing shall be installed in a best fit location above the forward step(s) to assist in climbing the steps according to NFPA 1901, current edition.

Bidder Complies	
Yes	No

There shall be a 2.00-inch minimum clearance between the bracket and the body.

Location: Front edge of catwalk, angled at approximately 30 degrees.

ILLUMINATED FOLDING STEPS

Three (3) illuminated folding steps shall be installed on the left rear vertical face of the body.

STEP LIGHT ACTIVATION

The step lights shall be activated when the park brake is set.

ILLUMINATED FOLDING STEPS

Three (3) illuminated folding steps shall be installed on the right rear vertical face of the body.

STEP LIGHT ACTIVATION

The step lights shall be activated when the park brake is set.

HANDRAILS

Two (2) full height vertical handrails constructed of knurled aluminum tubings shall be mounted, one (1) on each side of the rear center compartment area of the rear of the apparatus. The vertical rear of body handrails shall be mounted with offset stanchions.

One (1) 36.00 inches long handrail shall be horizontally mounted just below the bottom of the hose bed.

REAR TOW EYES

There shall be two (2) rear tow eyes installed on the rear sub frame support structure, one each side. The location of the tow eyes shall be below the rear center compartment.

Bidder Complies	
Yes	No

The tow eyes shall be manufactured of 1.00 inch plate steel that is bolted to the chassis frame rail with a minimum of 6 grade 8 bolts.

PAINT SPECIFICATIONS

All bright metal fittings, if unavailable in stainless steel, shall be heavily chrome plated.

Critical body and sub-frame area which cannot be primed after assembly shall be pre-painted.

All welded metal surfaces shall be ground to a smooth surface prior to a degreasing and high pressure, high temperature phosphatizing process. The entire surface shall be sprayed with a non-chromate sealing compound to prevent formulation of stains or flash rust on previously phosphatized parts.

The paint applied to the apparatus shall be PPG Industries Delta® brand, applied throughout a multi-step process including at least two coats of each color and clear coat finish.

The coating shall be an infra-red, baked air dried. The coatings shall provide full gloss finished suitable for application by high-pressure airless or conventional low-pressure air atomizing spray.

The coating system, as supplied and recommended for application, shall meet all applicable federal, state and local laws and regulations now in force or at any time during the courses of the bid.

The manufacturer shall supply (upon request) for each product and component of the system, a properly complete OSHA "Material Data Safety Sheet".

The following documents of the issue in effect on the date of the invitation to quote form a part of this document to the extent specified herein:

Federal Standards: Number 141A and 141B paint, varnish, lacquer and related material: methods of inspection, sampling, and testing.
Military Standard: MIL-C 83486B Coating, Urethane, Aliphatic Isocyanates, for Aerospace applications. Industry Methods and Standards: ASTM Method of

Bidder Complies	
Yes	No

Analysis (American Society for testing and Materials), BMS 10-72A (Boeing Material Specifications).

The entire exterior body structure (excluding roll-up doors) shall receive the primer coats and the finish coats. The apparatus body, will be painted in a down draft type paint booth to reduce dust, dirt or impurities in the finish paint. The painted surfaces shall have a finish with no runs, sags, craters, pinholes or other defects.

PAINT COLOR

The apparatus shall be painted PPG Industries Delta® PPG Red 926234

SPARAY-ON BED LINER COMPARTMENT FINISH

The compartment interiors shall be coated with Spray-on bed liner.

COMPARTMENT FINISH COLOR

The Spray-on bed liner Color shall be Medium Gray.

LOW-VOLTAGE ELECTRICAL SYSTEM

The apparatus shall be equipped with a Weldon Logic Controlled, Low-Voltage (12v) Electrical System compliant with the latest revision of the NFPA 1901 guideline.

The system shall be capable of performing total load management, load management sequencing, and load shedding via continuous monitoring of the low-voltage electrical system. In addition, the system shall be capable of switching loads (like operating as an emergency warning lamp flasher) eliminating the dependency on many archaic electrical components such as conventional flasher modules. The system shall also incorporate provisions for future expansion or modification.

The low-voltage electrical system shall be designed to distribute the placement of electrical system hardware throughout the apparatus thereby enabling a smaller, optimized wire harness.

Bidder Complies	
Yes	No

The programmable, logic-controlled system shall eliminate redundant electrical hardware such as harnesses, circuit boards, relays, circuit breakers, and separate electrical or interlock subsystems and associated electronics for controlling various electrical loads and inputs.

As-built electrical system drawings and a vehicle-specific reference of I/O shall be furnished in the delivery manuals. These drawings shall show the electrical system broken down into separate functions, or small groups of related functions. Drawings shall depict circuit numbers, electrical components and connectors from beginning to end. A single drawing for all electrical circuits installed by the apparatus builder shall not be accepted.

LED DOT LIGHTING

There shall be seven (7) lights located on the rear of the vehicle. Three (3) of the lights shall be mounted on the upper rear face of the body just below the hose bed area in a cluster for use as identification lamps. Two (2) lights shall be located outboard on the upper rear, one each side and two (2) lights on the upper vertical area of Zones B & D facing the side, for use as clearance lamps.

The lights shall be Weldon brand 9186-1500 series LED red markers

DOT ADDITIONAL MARKER LIGHTS

There shall be two (2) amber LED intermediate turn signals/intermediate marker lights installed in the rub rail, forward of the rear wheel well, one (1) each side.

The lights shall be Weldon brand 9186-1500 series LED amber markers/turn.

INTERMEDIATE TURN SIGNALS

The intermediate turn signals shall steady burn when not flashing.

WHELEN LIGHTBAR

The lightbar shall be supplied with the chassis.

Bidder Complies	
Yes	No

LIGHTBAR ACTIVATION

The upper lightbar activation shall be wired into the chassis provided front warning switch.

UPPER REAR WARNING LIGHTS/ZONE C

Two (2) Whelen model #L31HRFN, LED beacon lights with red lenses shall be provided. The high profile 12v beacon shall incorporate 32 white Super-LEDs.

The beacon shall measure 4.00 inches x 7.20 inch diameter.

One (1) installed on each side of the upper rear of the apparatus body.

UPPER ZONE C WARNING ACTIVATION

The upper warning lights shall be controlled through the master warning switch and a secondary side warning switch located on the Vista display control screen. The switches shall be clearly labeled for ease of identification.

LOWER WARNING LIGHTS/ZONE A

Zone A warning lights shall be provided on the chassis.

FRONT WARNING LIGHT ACTIVATION

The front warning lights shall be controlled through the chassis provided front warning switch.

LOWER WARNING LIGHTS/ZONE B

One (1) Whelen Model M6 Super LED flashing red lights with clear lenses shall be provided and installed on the lower area rearward at the tailboard.

Bidder Complies	
Yes	No

LOWER SIDE WARNING LIGHT SWITCH E-MASTER/VISTA

The lower side warning lights shall be controlled through the master warning switch and a secondary side warning switch located on the Vista display control screen. The switches shall be clearly labeled for ease of identification.

LOWER WARNING LIGHTS/ZONE C

Two (2) Whelen Model M6 Super LED flashing red lights with clear lenses shall be provided on the rear of the apparatus body above the rear taillight cluster, one (1) each side.

LOWER REAR WARNING LIGHT SWITCH E-MASTER/VISTA

The lower rear warning lights shall be controlled through the master warning switch and a secondary rear warning switch located on the Vista display control screen. The switches shall be clearly labeled for ease of identification.

LOWER WARNING LIGHTS/ZONE D

One (1) Whelen Model M6 Super LED flashing red lights with clear lenses shall be provided and installed on the lower area rearward at the tailboard.

LOWER SIDE WARNING LIGHT SWITCH E-MASTER/VISTA

The lower side warning lights shall be controlled through the master warning switch and a secondary side warning switch located on the Vista display control screen. The switches shall be clearly labeled for ease of identification.

LOWER WARNING LIGHTS/ZONE B & D

Two (2) Whelen M6 Series Super LED flashing red lights with clear lenses shall be provided on the lower side portion of the pump house module, one (1) each side.

Bidder Complies	
Yes	No

LOWER SIDE WARNING LIGHT SWITCH E-MASTER/VISTA

The lower side warning lights shall be controlled through the master warning switch and a secondary side warning switch located on the Vista display control screen. The switches shall be clearly labeled for ease of identification.

LOWER ZONES B&D CAST ALUMINUM LIGHT HOUSING

A cast aluminum light housing shall be used for the rearmost warning lights in zones B & D to ensure the lights are mounted as far rearward as possible.

WARNING LIGHTS FLASH

The warning lights shall feature the "Triple Flash 75 in/out" flash pattern.

REAR TAILLIGHT CLUSTER

There shall be a Whelen LED rear taillight cluster furnished and installed on the rear of the apparatus, one cluster each side.

The lights shall be installed in individual polished bezels and shall consist of the following specified components:

1 - Whelen #M6 LED series red brake light
1 - Whelen #M6 LED series amber turn signal light populated in the shape of an arrow
1 - Whelen #M6 LED clear backup light

BACKUP LIGHTS

The backup lights shall illuminate when the Park Brake is set.

LED PERIMETER LIGHTS

There shall be Six (6) LED underbody perimeter lights installed on the apparatus. One (1) under each side at the front of the body, One (1) under each side below L3/R3 and one (1) each side under the rear tailboard.

Bidder Complies	
Yes	No

The lights shall be positioned to provide illumination to the immediate ground area around the unit.

They shall be manufactured by Teqnic.

PERIMETER LIGHTS ACTIVATION

The underbody perimeter lights shall be activated with activation of the chassis ground lights.

REAR TRAFFIC ADVISOR

One (1) Whelen model #TAL65 36.00-inch-long directional lightbar with six (6) 500 series LED light heads shall be installed on the rear of the apparatus.

The lightbar shall be installed below the intermediate step for protection and above the rear center compartment area so as to be readily visible by approaching traffic.

SIDE SCENE LIGHTING

There shall be four (4) scene lights installed on the body sides, two (2) on each side.

One (1) located at the front and one (1) located at the rear corner of the body side walls.

The scene lights shall be Whelen model #M9LZC 12-volt scene lights with chrome bezels. The lights shall offer LED directional lighting from 2 to 40-degrees with internal and external optics.

SCENE LIGHT ACTIVATION

The side scene lights shall be activated by two (2) switches on the vista display, one (1) labeled for each side of the body.

Bidder Complies	
Yes	No

The switches shall be labeled as follows:

Left Scene

Right Scene

REAR SCENE LIGHTING

There shall be two (2) scene lights installed at the rear body panels, one (1) on each side.

The scene lights shall be Whelen model #M9LZC 12-volt scene lights with chrome bezels. The lights shall offer LED directional lighting from 2 to 40-degrees with internal and external optics.

SCENE LIGHT ACTIVATION

The rear scene lights shall be activated by one (1) switch on the Vista display. The switch shall be labeled as follows:

Rear Scene

TELESCOPING LIGHT LOCATION

The specified telescoping lights shall be mounted at the rear face of the cab, one (1) each side on the vertical panels.

SCENE LIGHT MODEL

Whelen Pioneer model #PCH2P series LED side mount, bottom raise telescoping scene light shall be provided on the apparatus.

Each lamp head shall have two (2) 12v Super-LED® panel at 150 watts total. The light head shall draw 13.0 amps and generate 23,000 lumens. Each lamp head shall include a black fiberglass handle and shall be no more than 4.125 inches high by 14.00 inches wide by 2.50 inches deep. The lamp heads shall be powder coated white.

Bidder Complies	
Yes	No

REAR CAB SCENE LIGHT ACTIVATION

The rear cab scene lighting shall be activated by switch on each light head.

REFLECTIVE STRIPING

The reflective stripe applied to the outside perimeter of the chassis and apparatus as directed by the Fire Department shall be applied by the Dealer prior to the truck being placed into service.

REAR RETRO-REFLECTIVE CHEVRON STRIPING

The rear of body (excluding rear door) shall be equipped with Diamond Grade, retro-reflective striping in a chevron pattern, sloping downward and away from the centerline of the vehicle at an angle of 45-degrees.

The stripe shall be 6.00 inch (152.40 mm) wide alternating in colors in compliance with the current edition of NFPA 1901, current edition.

CHEVRON COLORS

The retro-reflective chevron striping shall be red and fluorescent yellow-green in color.

BODY LETTERING

The lettering shall be provided and installed on each side of the apparatus body, by the Dealer.

LICENSE PLATE BRACKET

A Cast Products, model LP0005-1-C, cast aluminum open bottom license plate bracket shall be installed on the apparatus.

The bracket shall incorporate a clear LED (WL0501) light to illuminate the license plate to meet DOT requirements.

Bidder Complies	
Yes	No

WHEEL CHOCKS

One (1) set of NFPA compliant Ziamatic folding wheel chocks model # SAC-44 shall be supplied with the apparatus

WHEEL CHOCK MOUNTING BRACKETS

One (1) set of Ziamatic folding wheel chock underbody horizontal mounts model # SQ-CH-44-H shall be installed on the apparatus under the body in front of the rear wheels on the left side.

LOOSE EQUIPMENT

All NFPA required loose equipment shall be provided by the fire department

GENERAL WARRANTY

A warranty shall be offered for each new fire apparatus manufactured for a period of two (2) years from the date of delivery

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part.

STRUCTURAL BODY WARRANTY

A structural Aluminum body warranty shall be provided by Spartan Emergency Response, for products of its manufacture to be free from defects in material and workmanship under normal use and service, for a period of ten (10) years.

The official warranty document shall be provided with each proposal.

PAINT WARRANTY

A Paint Warranty shall be provided for products of its manufacture to be free from defects in material and workmanship, under normal use and service, for a period of ten (10) years.

The official warranty document shall be provided with each proposal.

Bidder Complies	
Yes	No

PUMP WARRANTY

Waterous Company shall provide a limited manufacturer's pump warranty with total protection package (TTP-5) to be free from defects in material and workmanship, under normal use and service, for a period of five (5) years from the date placed into service. The official warranty document shall be provided with each proposal.

PLUMBING WARRANTY

A Stainless-Steel Plumbing/Piping warranty will be provided by Spartan Emergency Response for products of its manufacture to be free from defects in material and workmanship, under normal use and service, for a period of ten (10) years. The official warranty document shall be provided with each proposal.

TANK WARRANTY

A lifetime tank warranty shall be provided by the tank manufacturer, UPF. The official warranty document shall be provided with each proposal.

MULTI-PLEXED ELECTRICAL WARRANTY

A four (4) year limited (V-MUX) multiplex system warranty, of Weldon Technologies, Inc., shall be for parts and labor, while under normal use and service, against mechanical, electrical and physical defects from the date of installation.

The warranty shall exclude: sensors, shunt interface modules, serial or USB kits, transceivers, cameras, GPS, and electrical display screens, which shall be limited to a period of one (1) time a year repair for parts and labor from the date of installation. The official warranty document shall be provided with each proposal.

Bidder Complies	
Yes	No

ELECTRICAL SCHEMATICS

The apparatus manufacturer shall supply one (1) set(s) of as-built wiring schematics, to include all line voltage schematics, with each apparatus.

DEALER PROVIDED, INSTALLED EQUIPMENT

TOOL BAORDS, ALUMINUM DA SANDED FINISH

The previously listed tool boards for the over wheel compartments (L2 & R2) shall be installed by the Dealership, as instructed by the Fire Department.

FLASHLIGHTS

Six (6) Streamlight Survivor LED orange flashlights, model FL598 shall be provided and installed as instructed by the Fire Department. Each light shall be mounted in an individual AC/DC changing base, wired to the chassis 12-volt charging system.

SCBA WALKAWAY BRACKET

One (1) Zico model ULLH SCBA walk-away bracket shall be supplied and mounted in the location as directed by the Fire Department for the driver's air pack.

LETTERING AND STRIPING

Graphics to match the current fleet of apparatus shall be supplied and installed by a local graphics provider, through the apparatus dealership. The apparatus shall be identified as ENGINE 1.