GREENEVILLE FIRE DEPARTMENT

PUMPER SPECIFICATIONS

Bidder Complies
Yes or No

INTENT OF SPECIFICATIONS

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

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

All equipment and components shall be in compliance with the National Fire Protection Association Pamphlet 1901 (2009 Edition).

Loose equipment shall be provided only as listed in these specifications.

The bidder must carry adequate insurance to cover any damage to the unit which may occur while in the possession of the bidder.

QUALITY AND WORKMANSHIP

The design of the apparatus must embody the latest approved automotive engineering practices. The workmanship must be of the highest quality in its respective field. Special consideration shall be given to the following points:

1- Accessibility of the various units which require periodic maintenance operations, ease of operation (including both pumping and driving) and symmetrical proportions.

2- Construction must be rugged and ample safety factors must be provided to carry loads specified and to meet both on and off road requirements and speed conditions.

3- Welding shall not be employed in the assembly to the apparatus in a manner that will prevent the ready removal of any component part for service or repair.

DATA REQUIRED OF THE CONTRACTOR - NFPA 4.20

NFPA 4.20.1 Fire Apparatus Documentation

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

(1) The manufacturer's record of apparatus construction details, including the following information:
a. Owners name and address

Bidder Complies

Yes or No

b. Apparatus manufacturer, model and serial number
c. Chassis make model and serial number
d. GAWR of front and rear axles and GVWR
e. Front tire size and total rated capacity in pounds
f. Rear tire size and total rated capacity in pounds
g. Chassis weight distribution in pounds with water and manufacturer mounted equipment front and rear
h. Engine make, model, serial number, rated horsepower and related speed and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio
i. Type of fuel and fuel tank capacity
j. Electrical system voltage and alternator output in amps
k. Battery make, model, and capacity in cold crank amps (CCA)
l. Transmission makes, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio.
m. Ratios of all driving axles.
n. Maximum governed road speed
o. Pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
p. Pump transmission make, model, serial number and gear ratio
q. Auxiliary pump make, model, rated capacity in gallons per minute, (liters per minute where applicable) and serial number
r. Water tank certified capacity in gallons or liters
s. Paint manufacturer and paint number(s)
t. Company name and signature of responsible company representative
u. Weight documents from a certified scale showing actual loading on the front axle, rear axles(s), and over all fire apparatus (with the water tank full but without personnel, equipment, and hose)
(2) If the apparatus is a mobile foam fire apparatus, the certification of foam tank capacity
(3) Certification of compliance of the optical warning system
(4) Siren manufacturer's certification of the siren
(5) Written load analysis and results of the electrical system performance tests
(6)Certification of slip resistance of all stepping, standing and walking surfaces
(7) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
(8) If the apparatus has a fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions
(9) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications
(10) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed
(11) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test
(12) If the apparatus has a fire pump, the certification of inspection and test for fire pump.
(13) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test
(14) When the apparatus is equipped with a water tank, the certification of water tank capacity

Bidder Complies

Yes or No

(15) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy and the final installer's certification the foam proportioning system meets this standard
(16) If the apparatus has a line voltage power source, the certification of the test for the power source

(17) Any other required manufacturer test data or reports

OPERATION AND SERVICE DOCUMENTS - NFPA 4.20.2

The contractor will supply, at time of delivery, at least two (2) sets of complete operation and service documents covering the completed apparatus as delivered and accepted.

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

The contractor shall also delivery with the fire apparatus the following documentation for the entire apparatus and each major operating system or major component of the apparatus:

(1) Manufacturer's name and address
(2) Country of manufacture
(3) Source for service and technical information
(4) Parts replacement information
(5) Descriptions, specifications, and ratings of the chassis, pump (if applicable) and the aerial device (if applicable)
(6) Wiring diagrams for low voltage and line voltage systems to include the following information:
(a) Pictorial representations of circuit logic for all electrical components and wiring
(b) Circuit identification
(c) Connector pin identification
(d) Zone location of electrical components
(e) Safety interlocks
(f) Alternator-battery power distribution circuits
(g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
(7) Lubrication charts
(8) Operating instructions for chassis, any major components such as pump or aerial device, and any auxiliary systems
(9) Precautions related to multiple configurations of aerial devices, if applicable
(10) Instructions regarding the frequency and procedure for recommended maintenance
(11) Overall apparatus operating instructions
(12) Safety considerations
(13) Limitations of use
(14) Inspection procedures

(15) Recommend service procedures
(16) Troubleshooting guide
(17) Apparatus body, chassis and other component manufacturer's warranties
(18) Special data required by this standard
(19) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus

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

ROADABILITY NFPA 4.15

NFPA 4.15.1 - The apparatus, when loaded to its estimated in-service weight, shall be capable of the following performance while on dry, paved roads that are in good condition:

1. From a standing start, the vehicle shall attain a speed of 35 mph within 25 seconds on a level road;

2. The apparatus shall attain a minimum top speed of 50 mph on a level road;

3. The apparatus shall be able to maintain a speed of at least 20 mph on any grade up to and including 6 percent.

NFPA 4.15.2 - The maximum top speed of fire apparatus with a GVWR over 26,000 lb shall not exceed either 68 mph or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower

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

NFPA TAG REQUIREMENTS

A label that states the number of personnel the vehicle is designed to carry shall be located in an area visible to the driver.

A sign that reads **"OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION"** shall be provided and located in the chassis cab in an area that is visible from each seating position.

An accident prevention sign that states **"OVERALL HEIGHT OF APPARATUS ___ INCHES"**

One "Final Stage Label" shall be attached to the driver’s side door jam. The label shall certify

Bidder Complies

Yes or No

that the complete vehicle conforms to the federal motor vehicle safety standards, which have been previously fully certified by the incomplete vehicle manufacture or by the intermediate vehicle manufacture and have not been affected by the final stage manufacture.

An accident prevention signs that states **"DANGER: DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION DEATH OR SERIOUS INJURY MAY RESULT"** shall be provided and installed at the rear of the apparatus.

A label stating **"DO NOT WEAR HELMET WHILE SEATED"** shall be visible from each seating location.

WARRANTY POLICY

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

Each new motorized Fire and Rescue Apparatus to be free from defects in material and workmanship, under normal use and service, for a period of one year. The obligation under this warranty is limited to replacing or repairing any part or parts thereof, which upon examination would be determined to be defective. Such defective part or parts will be replaced free of charge and without charge for installation to the original purchaser.

BODY WARRANTY

The manufacturer shall list the entire body against rust and/or full corrosion perforation and metal fatigue for a minimum of ten (10) years from the date of delivery to the original purchaser, provided the apparatus is used in a normal and reasonable manner.

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

A. Hose bed side walls

B. Compartments and compartment supports

C. Compartment doors "except rollup doors when specified"

D. Complete sub-frame including pump house framing

E. Cab and doors if single source manufactured.

Bidder Complies

Yes or No

WATER TANK WARRANTY

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

PUMP WARRANTY

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

PUMP PLUMBING WARRANTY

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

PAINT WARRANTY

The paint on the unit will be provided with a ten (10) year paint finish guarantee which will cover the finish for the following items including the lettering and graphics.

Peeling or delamination of the top coat and/or other layers of paint.

Cracking or checking.

Loss of gloss caused by defective finishes which are covered by this guarantee.

CHASSIS WARRANTY

Chassis shall be warranted by the chassis manufacturer as per the chassis manufacturer's issued warranty if not single source.

100% WARRANTY ON ALL OTHER ITEMS FOR ONE YEAR.

Manufacturer shall warrant that the areas finished will be free throughout the warranty period from defects causing paint failures resulting in corrosion, blistering, cracking, peeling, hazing, chalking, delaminating or loss of gloss throughout the entire area finished.

Manufacturer shall warrant each new cab and body manufactured by them against exterior

corrosion perforation for a warranty period of ten (10) years after the date on which the vehicle is first delivered to the purchaser or 100,000 miles, whichever occurs first.

Awarded vendor shall be required to reimburse any expenses incurred by the City covering transport labor cost or shipment charges on **any** component failure when component manufacturer requires an "Authorized Dealer Repair Only" and when the authorized repair facility extends beyond a fifty (50) mile radius of the Town of Greeneville city limits during the warranty period.

Awarded vendor shall agree to perform any and all warranty work on any apparatus component or system throughout the complete warranty period which will begin at the time the unit(s) are placed in active service. *This specification requires manufacturers delayed warranty start*.

Warranty claims shall be addressed within a period 3 days from time of notification by the awarded vendor.

Successful completion of any warranty repair shall be no longer than 2 weeks (10 business days) from time of notification.

Vendor shall honor these warranty specifications in conjunction with any manufacturer's stated or expressed warranty policy regardless of exclusions.

HISTORY

Proposals shall include company profile and history which details manufacturer's experience.

INSPECTIONS

Awarded vendor shall host a pre-build engineering meeting, for four (4) people, at the factory location to finalize apparatus drawings and plans and to answer any issues or misconceptions by the vendor or purchaser.

A mid build inspection trip to the manufacturer's facility shall be provided for four (4) people for inspection *PRIOR* to final painting.

A final inspection trip to the manufacturer's facility shall be provided for four (4) people for inspection upon completion of the unit prior to delivery.

Final inspections shall not guarantee final acceptance.

Vendor shall provide air travel for inspection trips on distances beyond 300 miles from the city limits. Ground transportation will not be acceptable.

Bidder Complies

Yes or No

DELIVERY& DEMONSTRATION

Delivery acceptance of unit(s) may be refused if any part of the awarded specifications is not maintained without prior written purchaser authorization of such change.

Delivery acceptance of unit(s) may be refused if any device, feature or system is deemed as unsafe to the operator and/or the general public as determined by the Town of Greeneville knowledge or experience.

Delivered unit(s) are required to complete an acceptance inspection and shall be inspected against awarded specifications as a total unit, regardless of multiple manufacturer contributions to the completed elements of the unit(s), before acceptance is granted.

Bidder misunderstanding and/or misinterpretation which results in an unsatisfactory bid or final delivered product is not the responsibility of the Town of Greeneville.

The Town of Greeneville shall have the sole interpretation of the bid requirements and shall have final determination whether submitted bids and/or the final product delivered satisfy the requirements of the bid.

All awarded bids shall be subject to final inspection of the unit(s) ordered by the Fire Chief, or designee, and must be compliant with all bid requirements prior to acceptance of the unit(s) and final payment.

Any non-compliant unit(s) must be made compliant at the expense of the awarded bidder and within a reasonable time frame, as determined by the Town of Greeneville.

Misinterpretation of the specifications by the vendor or failure to supply the appropriately equipped unit(s) specified or intended, based on the Town of Greeneville's interpretation, shall be corrected to the benefit of the Town of Greeneville by the awarded bidder at the bidders' expense.

In all cases the Town of Greeneville's interpretation and definition of unit(s) specifications and requirements shall be the final determination of a successful final inspection and compliance with awarded specifications before unit acceptance will be granted.

Failure to provide the requested documentation on delivery shall be considered as non-compliance to awarded specifications and allows the Town of Greeneville the right to refuse acceptance.

Bidder Complies

Yes or No

Chassis Specification

MODEL

The chassis shall be a custom design. 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 current 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.

APPARATUS TYPE

The apparatus shall be a rescue/pumper/engine vehicle designed for emergency service use which shall be equipped with a permanently mounted fire pump which has a minimum rated capacity of 1500 gallons per minute. The apparatus shall include a 1000-gallon 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.

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 axle shall sufficient weight rating for chassis engineering. Provisions will be accepted for independent suspensions.

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 sufficient weight rating for chassis engineering.

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

PUMP PROVISION

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

CAB STYLE

The cab shall be a custom, fully enclosed, with a 10.00 inch raised roof 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 length shall be no less than 62". This style of cab shall offer up to a minimum of four (4) seating positions.

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

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

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

The cab 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.

Bidder Complies

Yes or No

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. 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 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.

OCCUPANT PROTECTION

Proposals should include all manufacturer options for occupant protection systems. (Air bags, curtain bags, etc).

CAB FRONT FASCIA

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

FRONT GRILLE

The grille shall include a minimum free air intake of 750.00 square inches.

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, the seams shall be sealed with SEM brand seam sealer and painted with two (2) to four (4) coats of 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 cab shall then be painted with the upper and lower colors specifically designated by the customer with a minimum thickness of two 2.00 mils of paint, 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 match current paint scheme.

CAB PAINT SECONDARY/UPPER COLOR

The secondary/upper paint color shall match current paint scheme.

CAB PAINT EXTERIOR BREAKLINE

The upper and lower paint shall meet at a break line on the cab which shall be located approximately 1.00 inch below the door windows on each side of the cab. The break line 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 look prior to the final pinstripe being installed by the OEM.

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 or No

CAB PAINT INTERIOR

The visible interior cab structure surfaces shall be painted with a silver gray texture finish.

CAB ENTRY DOORS

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors designed for ease of entering and egress when outfitted with an SCBA. The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

CAB ENTRY DOOR TYPE

All cab entry doors shall be full length in design to fully enclose the lower cab steps.

CAB STRUCTURAL WARRANTY

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. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

CAB TEST INFORMATION

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

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

ELECTRICAL SYSTEM

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

APPARATUS WIRING PROVISION

An apparatus wiring panel shall be installed in the center dash area behind the rocker switch panel which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 30 amp, three (3) 10 amp, and one (1) 15-amp circuit, with relays and breakers with trigger wires which shall be routed to the rocker switch panel.

LOAD MANAGEMENT SYSTEM

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have sixteen (16) programmable outputs to supply warning and load switching requirements. Outputs one (1) through twelve (12) shall be independently programmable to activate during the scene mode, the response mode, or both. These outputs can also be programmed to activate with the ignition or master warning switch, or to sequence and shed along with the priority. Output thirteen (13) shall be designated to activate a fast idle system. Output fourteen (14) shall provide a low voltage warning for an isolated battery. Output fifteen (15) is a user configurable output and shall be programmable for activating between 10.50 and 15.00 volts. Output sixteen (16) shall provide a low voltage alarm that activates at the NFPA required 11.80 volts. The TSM shall have a digital display to indicate system voltage in normal operation mode and also indicate the output configuration during programming mode. The TSM shall be protected against reverse polarity and shorted outputs and be enclosed in a metal enclosure to enhance EMI/RFI protection. Provisions for multi-plexed systems that include a load management system will be considered as options.

DATA RECORDING SYSTEM

The chassis shall have a Class One Vehicle Data Recorder (VDR) system installed. The system shall be designed to meet NFPA 1901. The following information shall be recorded:

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

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop

computer to the VDR system. The laptop connection shall be a panel mounted female type B USB connection point, remotely mounted in the left side foot well of the cab.

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.

AUXILIARY ACCESSORY POWER

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

EXTERIOR ELECTRICAL TERMINAL COATING

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

ENGINE

The chassis engine shall be a Cummins ISL engine. The ISL-9 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 liter) of displacement.

The ISL-9 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

DIESEL PARTICULATE FILTER CONTROLS

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

ENGINE PROGRAMMING HIGH IDLE SPEED

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

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with an automatic high-idle speed control which shall be pre-set to operate when the engine is at a specified RPM to increase alternator output with manual switch. This device shall operate only when the master switch is activated 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 automatically re-engage when the brake is released, or when the transmission is placed in neutral.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

AUXILIARY ENGINE BRAKE

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

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

AUXILIARY ENGINE BRAKE CONTROL

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

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

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

Bidder Complies

Yes or No

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 engine oil, coolant, transmission, and power steering fluid fills shall be located under the cab. The windshield washer fill shall be accessible through the cab.

ENGINE DRAIN PLUG

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

ENGINE WARRANTY

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

REMOTE THROTTLE CONTROL

A FRC In-Control 400 pressure governor pump panel control module and a pressure transducer shall be provided. FRC is designed to control the engine fuel to maintain a desired pump pressure or engine speed setting along with displaying diagnostic information. LED readouts shall display RPM, engine oil pressure, engine temperature and battery voltage. An audible alarm output shall also be part of the system.

ENGINE PROGRAMMING IDLE SPEED

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

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled clutch fan. 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 fail safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure.

Bidder Complies

Yes or No

ENGINE COOLING SYSTEM

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

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

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

The cooling system shall include a one piece injected molded polymer eleven (11) blade fan with a 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 sight glass 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.

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.

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.

ENGINE COOLANT FILTER

An engine coolant filter with a shut-off valve for the inlet and outlet shall be installed on the chassis. The location of the filter shall allow for easy maintenance.

Proposals offering engines equipped with coolant filters shall be supplied with standard non-chemical type particulate filters.

ELECTRONIC COOLANT LEVEL INDICATOR

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

ENGINE PUMP HEAT EXCHANGER

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

COOLANT HOSES

The cooling system hoses shall be silicone heater hose with rubber hoses in the cab interior. The radiator hoses shall be formed silicone coolant hoses with formed aluminized steel tubing. All heater hose, silicone coolant hose, and tubing shall be secured with stainless steel constant torque band clamps.

ENGINE AIR INTAKE

The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab behind the right hand side fascia. This filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a corrosion resistant steel frame. This multilayered screen shall be designed to

trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.

The engine shall also include an air intake filter which shall be bolted to the frame and located under the front of the cab on the right hand side. The dry type filter shall ensure dust and debris safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal.

The air flow distribution and dust loading shall be uniform throughout the high-performance filter cone pack, which shall result in pressure differential for improved horsepower and fuel economy. The air intake shall be mounted within easy access via a hinged panel behind the right hand side headlight module. 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 EXHAUST SYSTEM

The exhaust system shall be mounted below the frame in the outboard position with the SCR canister in line rearward of the DPF. The exhaust system shall utilize a 90-degree bend in the exhaust tubing from the turbo into a side inlet DPF canister that allows the entire system to be pulled forward. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires with a fixed direct side outlet of the SCR.

The exhaust system shall include a diesel particulate filter (DPF), a diesel oxidation catalyst, 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 injected into the system through the decomposition tube between the DPF and SCR.

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

The DPF, the decomposition tube, and the SCR canister through the end of the tailpipe shall be connected with zero leak clamps.

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 minimum of four (4) usable gallons and shall be mounted on the left hand side of the chassis 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.

ENGINE EXHAUST ACCESSORIES

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

ENGINE EXHAUST WRAP

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

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.

The transmission shall include two (2) internal oil filters which shall offer 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
6th	0.64:1 (if applicable)
Rev	5.03:1

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will automatically select a five (5) speed operation.

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.

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 provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators. The prognostics monitor various operating parameters to determine and shall alert you when a specific maintenance function is required.

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

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

TRANSMISSION COOLING SYSTEM

The transmission shall include 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 oil drain plug.

TRANSMISSION WARRANTY

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

Bidder Complies

Yes or No

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with Spicer 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®.

MIDSHIP PUMP / GEARBOX MODEL

The midship pump/gearbox provisions shall be for a Hale QMAX or Waterous CS pump.

PUMP SHIFT CONTROLS

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

FUEL FILTER/WATER SEPARATOR

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

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.
A secondary fuel filter shall be included as approved by the engine manufacturer.

FUEL LINES

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

FUEL SHUTOFF VALVE

A fuel shutoff valve shall be installed in the fuel draw line at the primary fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump.

A second 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.

Bidder Complies

Yes or No

FUEL TANK

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

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

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non-drive front axle, with sufficient weight rating for chassis engineering. Provisions will be accepted for independent suspensions.

FRONT AXLE WARRANTY

The front axle shall be warranted for two (2) years with unlimited miles under the general service application. Details of warranty are provided on the PDF document attached to this option.

FRONT WHEEL BEARING LUBRICATION

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

STEERING COLUMN/ WHEEL

The cab shall include a 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.

POWER STEERING PUMP

The hydraulic power steering shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type.

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.

CHASSIS ALIGNMENT

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

REAR AXLE

The rear axle shall be a Meritor single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity determined by chassis engineering.

REAR AXLE WARRANTY

The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

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.

FRONT TIRE

The front tires shall be Michelin 425/65R22.5 "L" tubeless radial XFE regional tread.

The front tire stamped load capacity shall be 22,800 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

The Michelin Tire Intermittent Service Rating load capacity shall be 24,400 pounds per axle with a speed rating of up to 75 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

REAR TIRE

The rear tires shall be Michelin 12R-22.5 16PR "H" tubeless radial XDN2 all-weather tread.

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

The Michelin Tire Intermittent Service Rating load capacity shall be 28,880 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch. The Michelin Intermittent Service Rating limits the operation of the emergency vehicle to one (1) hour of loaded travel with a one (1) hour cool down prior to another loaded run.

TIRE PRESSURE INDICATOR

There shall be a voucher provided with the chassis for a pop up style tire pressure indicator at each tire valve stem. The indicator shall provide visual indication of pressure in the specific tire.

The tire pressure indicators shall be redeemed upon the vehicle manufacturer's receipt of the voucher for installation by the customer.

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. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

REAR WHEEL

The rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch LvL One™ aluminum wheels with a polished outer surface and 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 wheels and tires, including any spare wheels and tire assemblies, shall be dynamically balanced.

WHEEL TRIM

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

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

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

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.

TIRE CHAINS

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

Bidder Complies

Yes or No

TIRE CHAINS ACTIVATION

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

BRAKE SYSTEM

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

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

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

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

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

The Electronic Stability Control (ESC) unit is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the

vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The Controller Area Network (CAN) bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

FRONT BRAKES

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

REAR BRAKES

The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type. The brakes shall feature a cast iron shoe.

PARK BRAKE

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

PARK BRAKE CONTROL

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

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 an air dryer with an integral 100-watt heater. 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

FRONT BRAKE CHAMBERS

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

REAR BRAKE CHAMBERS

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

AIR COMPRESSOR

The air compressor provided for the engine shall be a 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 mounted to the right frame rail.

MOISTURE EJECTORS

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

AIR SUPPLY LINES

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

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

REAR AIR TANK MOUNTING

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

FRAME WARRANTY

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

FRAME CLEAR AREA

The chassis frame shall be left clear of chassis mounted components inside or outside the frame rails within the first 30.00 inches behind the cab to allow space for OEM installed components. Cross members may be installed in the clear area if required for proper frame or driveline configuration.

FRAME PAINT

The frame shall be powder coated black prior to any attachment of components.

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

Any proposals offering painted frame 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.

FRONT BUMPER

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. .

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 18-21.00 inches ahead of the cab.

FRONT BUMPER APRON

The 18-21.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

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

Bidder Complies

Yes or No

FRONT BUMPER COMPARTMENT CENTER

The front bumper shall include a hose tray compartment in the bumper to hold 100'. The compartment shall include a cover constructed of 0.19-inch-thick bright embossed aluminum tread plate.

FRONT BUMPER COMPARTMENT COVER HARDWARE

The front bumper compartment shall include a 7.00-inch stainless lift handle at the top center of the compartment lid. Gas cylinder stays shall hold the cover open. The cover shall be held in the closed position via two (2) pull to release rubber "T" style hold down handles located one (1) at each end of the cover.

MECHANICAL SIREN

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

MECHANICAL SIREN LOCATION

The siren shall be mounted in a recessed location either in grill or left side of bumper.

AIR HORN

The front bumper shall include two (2) Grover-Stuttertone air horns which shall measure 21.00 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish on the exterior and a painted finish deep inside the trumpet.

AIR HORN LOCATION

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

AIR HORN 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

The bumper shall include one (1) 200-watt speaker or two (2) 100 watt which shall be recess mounted within the bumper fascia. The speaker shall include a flat mounting flange which shall be polished aluminum.

ELECTRONIC SIREN SPEAKER LOCATION

The electronic siren speaker shall be located on the front bumper face.

FRONT BUMPER TOW HOOKS

Two (2) heavy duty tow hooks, painted to match the chassis frame, shall be installed in a rearward position out of the approach angle area, bolted directly to the side of the chassis frame 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 set the parking brake in order to tilt the cab.

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

CAB TILT LIMIT SWITCH

A cab tilt limit switch shall be installed. The switch will effectively limit the travel of the cab when being tilted. The limit adjustment of the switch shall be preset by the chassis manufacturer

to prevent damage to the cab or any bumper mounted option mounted in the cab tilt arc. Further adjustment to the limit by the apparatus manufacturer shall be available to accommodate additional equipment.

CAB WINDOWS

Specifications shall include power windows on all doors.

CLIMATE CONTROL

The cab shall be equipped with a ceiling mounted combination defrost / heating and air-conditioning system mounted above the engine tunnel in a central location.

The system shall offer sixteen (16) adjustable louvers. Six (6) of the louvers shall face forward towards the windshield, offering 45,000 BTU of heat at 320 CFM for defrosting. The system shall include six (6) rearward facing louvers to direct air for the crew area and four (4) for driver and officer comfort. The HVAC system shall be designed to produce 60,000 BTU of heat and 32,000 BTU of cooling. The HVAC cover shall be made of aluminum which shall be coated with a customer specified interior paint, or protective coating.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-Quip EZ-Clip fittings.

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 on the dash next to driver 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 silver gray texture finish.

Bidder Complies

Yes or No

A/C CONDENSER LOCATION

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

A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

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.

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 0.75 inch thick including a vertically lapped polyester fiber layer, a 1.0 lb/ft² PVC barrier layer, an open cell foam layer, and a moisture and heat reflective foil facing reinforced with a woven fiberglass layer. The foil surface acts as protection against 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 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads.

INTERIOR TRIM FLOOR

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

INTERIOR TRIM VINYL

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 sound deadening material.

HEADER TRIM

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

TRIM CENTER DASH

The main center dash area shall be constructed of durable vacuum formed ABS composite.

TRIM LH DASH

The left hand dash shall be a one (1) piece durable vacuum formed ABS composite housing which shall be custom molded for a perfect fit around the instrument panel. The left hand dash shall offer lower vertical surface area to the left and right of the steering column to accommodate control panels.

TRIM RH DASH

The right hand dash trim shall consist of a vacuum formed ABS composite module, which contains a glove compartment with a hinged locking door and a Mobile Data Terminal (MDT) provision. The glove compartment size shall be 13.50 inches wide X 6.25 inches high X 5.50 inches deep. The MDT provision shall be provided above the glove compartment.

ENGINE TUNNEL TRIM

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

POWER POINT DASH MOUNT

The cab shall include two (2) 12-volt cigarette lighter type with 2.1a USB receptacle installed in the switch panel to provide a power source for 12-volt electrical equipment. The receptacle shall be wired battery direct.

Bidder Complies

Yes or No

AUXILIARY POWER POINT ENGINE TUNNEL

The cab interior shall include one (1) 12 volt cigarette lighter type receptacle with 2.1a USB to provide a power source for 12 volt electrical equipment. The receptacle shall be connected directly to the batteries. The receptacle shall be located on the rear of the engine tunnel near the top at the center.

STEP TRIM

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of polished aluminum grating with angled outer corners. The step shall feature a splash guard to reduce water and debris from splashing in to the step. The splash guard shall have an opening on the outer edge to allow debris and water 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.

DOOR TRIM CUSTOMER NAMEPLATE

The interior trim shall include a customer nameplate which states the vehicle was custom built for Greeneville Fire Department.

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include high visibility reflective tape. A white reflective tape 1.00 inch in width 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. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLE "A" PILLAR

There shall be two (2) rubber covered 11.00-inch grab handles installed inside the cab, one on each “A” post at the left and right door openings. The 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.

Bidder Complies

Yes or No

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 TRIM VINYL COLOR

The cab interior vinyl 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.

INTERIOR ABS TRIM COLOR

The cab interior vacuum formed ABS composite trim surfaces shall be gray in color.

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be gray or black in color.

CAB PAINT INTERIOR DOOR TRIM

The inner door panel surfaces shall be painted silver gray texture finish.

HEADER TRIM INTERIOR PAINT

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

DASH PANEL GROUP

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

SWITCHES CENTER PANEL

The center dash panel shall be the location of exterior lighting rocker switches.

SWITCHES RIGHT PANEL

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

SEAT BELT WARNING

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

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 seats shall be covered with rugged material. This material shall be semi- resistant to UV rays and from being saturated or contaminated by fluids.

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 Bostrom series. The four-way seat shall feature 3.00 inch vertical travel air suspension and electric fore and aft adjustment with 6.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The bottom seat cushion shall include an adjustment for rake angle offering added comfort.

The seat position shall include a three-point shoulder harness with lap belt and an automatic retractor attached to the seat. The buckle portion of the seat belt shall be mounted on a semi-rigid stalk extending from the seat base within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 37.00 inches measured with the seat suspension height adjusted to the upper limit of its travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male

weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208.

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

SEAT BACK DRIVER

The driver's seat shall feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also 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.

SEAT OFFICER

The officer's seat shall be a Bostrom SCBA series. The seat shall feature a tapered and padded seat, and cushion. The two-way, manually adjustable tracks shall include 7.75 inch fore and aft travel.

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

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

Bidder Complies

Yes or No

SEAT BACK OFFICER

The officer's seat back shall include an auto-locking (no straps) self-contained breathing apparatus (SCBA) holder. The holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

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

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

SEAT MOUNTING OFFICER

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

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 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 crew area shall include a seat in the forward-facing center position which shall be a Bostrom SCBA series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

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

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

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

SEAT BACK FORWARD FACING CENTER

The crew area seat backs shall include an auto-locking (no straps) self-contained breathing apparatus (SCBA) holder. The holder shall meet NFPA 1901-03 9G dynamic requirements for cylinder restraint systems for use in crew compartments of emergency response vehicles. The bracket shall accommodate and secure most types of self-contained breathing apparatus cylinders.

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

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

SEAT MOUNTING FORWARD FACING CENTER

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

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. Compartment shall be labeled for helmet storage.

Bidder Complies

Yes or No

CAB FRONT UNDERSEAT STORAGE ACCESS

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

SEAT COMPARTMENT DOOR FINISH

All under seat storage compartment access doors shall have a silver gray texture.

WINDSHIELD WIPER SYSTEM

The cab shall include a dual arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers which shall be affixed to a radial wet arm. The system shall include a single motor which shall initiate the arm in which both the left hand and right hand windshield wipers are attached, initiating a back and forth motion for each wiper. 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 interior exit door handles shall be flush paddle type, 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. The 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 key from the exterior. The door locks are designed to prevent accidental lock out.

Bidder Complies

Yes or No

GRAB HANDLES

The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of 14 gauge 304- stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.

REARVIEW MIRRORS

Powered/heated bus style with flat and convex glass.

REARVIEW MIRROR HEAT SWITCH

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

EXTERIOR TRIM REAR CORNER

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

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 3.50 inches wide made of 14-gauge 304 polished stainless steel.

MUD FLAPS FRONT

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

IGNITION

A master battery system with a keyless start ignition system shall be provided. A 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 a minimum of four (4) Harris BCI 31 950 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541. The cables shall have encapsulated ends with heat shrink and sealant.

BATTERY TRAY

The batteries shall be installed within a steel battery tray located on the left side or right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.

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

BATTERY BOX COVER

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

BATTERY CABLE

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

BATTERY JUMPER STUD

The starting system shall include battery jumper studs. 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.

BATTERY C HARGER/AIR COMPRESSOR

A Kussmaul Auto charge LPC 40 battery conditioner/air compressor shall be supplied. The battery conditioner shall be mounted in the cab behind the driver's seat. Kussmaul 091-9B-1-AD

100psi air compressor shall also be mounted behind driver's seat and wire to the 120-volt shore line connection.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

ELECTRICAL INLET

A Kussmaul Super 30 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

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

Amp Draw Reference List:
Kussmaul 1000 Charger - 3.5 Amps
Kussmaul 1200 Charger - 10 Amps
Kussmaul 35/10 Charger - 10 Amps
1000W Engine Heater - 8.33 Amps
1500W Engine Heater - 12.5 Amps
120V Air Compressor - 4.2 Amps

ELECTRICAL INLET LOCATION

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

ELECTRICAL INLET CONNECTION

The electrical inlet shall be connected to the battery conditioner.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a red cover.

HEADLIGHTS

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

Bidder Complies

Yes or No

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch programmable amber LED turn signals which shall be installed in polished aluminum housing above and outboard of the front warning and head lamps.

HEADLIGHT LOCATION

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

SIDE TURN/MARKER LIGHTS

The sides of the cab shall include two (2) 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) 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.

GROUND LIGHTS

Each door shall include an LED NFPA compliant 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 respective door as well as being activated when the parking brake is set.

STEP LIGHTS

The middle step located at each door shall include LED lighting which shall activate with the opening of the respective door.

Bidder Complies

Yes or No

ENGINE COMPARTMENT LIGHT

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

FRONT SCENE LIGHT LOCATION

There shall be front scene lights LED spot/flood brow light mounted in center of cab.

FRONT SCENE LIGHTS ACTIVATION

The front scene lighting shall be activated by a rocker switch.

SIDE SCENE LIGHTS

The side of the cab shall include two (2) FRC or Whelen scene lights, one (1) each side, which shall be surface mounted with a black bezel. The lights shall offer LED lighting at a gradient 32-degree angle.

SIDE SCENE LIGHT LOCATION

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

SIDE SCENE ACTIVATION

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

INTERIOR OVERHEAD LIGHTS

The cab shall include a two-section, red and clear LED dome lamp located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 9.50 inches in length X 5.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and both the red and clear portions can be activated by individual switches on each lamp.

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

AUXILIARY DOME LIGHT RH

The cab shall include one (1) 7.00 inches diameter clear auxiliary dome light above the right hand front seat position. The light shall be activated by an individual switch located on the side of the light.

AUXILIARY DOME LIGHT REAR CREW

The cab shall include four (4) 7.00 inch auxiliary dome lights on the headliner above the forward facing crew seats. Two (2) lights shall include clear lenses and two (2) lights shall include red lenses. One (1) clear light and one (1) red light shall be mounted above the outboard and center forward facing seating positions. The color of the light lenses from left to right shall be clear, red, red, clear. The clear lights shall be activated by the rear doors as well as an individual switch located on the side of each light and the red lights shall be individually switched only.

DO NOT MOVE APPARATUS LIGHT

The front headliner of the cab shall include a flashing red 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. This shall be a different sound than seatbelt warning indicator.

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

MASTER WARNING SWITCH

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

HEADLIGHT FLASHER

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

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

HEADLIGHT FLASHER SWITCH

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

Bidder Complies

Yes or No

INBOARD FRONT WARNING LIGHTS

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

INBOARD FRONT WARNING LIGHTS COLOR

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

OUTBOARD FRONT WARNING LIGHTS

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

OUTBOARD FRONT WARNING LIGHTS COLOR

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

FRONT WARNING SWITCH

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

INTERSECTION WARNING LIGHTS

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

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red with a clear lens.

INTERSECTION WARNING LIGHTS LOCATION

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

SIDE WARNING LIGHTS

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

SIDE WARNING LIGHTS COLOR

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

SIDE WARNING LIGHTS LOCATION

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

SIDE AND INTERSECTOR WARNING SWITCH

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

LIGHTBAR PROVISION

There shall be one (1) full-size, dual linear, LED light bar installed on the cab roof. There shall be two (2) mini light bars mounted on the sides in front of raised 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 LED lightbar mounted centered on the front of the cab roof. The lightbar shall be 72.00 inches in length. The lightbar shall feature a minimum of eight (8) red LED lights. The cable shall exit the lightbar on the right side of the cab.

LIGHTBAR SWITCH

The light bar shall be controlled by a rocker switch located on the switch panel. This switch shall be clearly labeled for identification.

SIREN CONTROL HEAD

A Whelen 295HFS2 electronic siren control head with remote amplifier shall be provided and flush mounted in the switch panel with a location specific to the customer's needs. The siren shall feature 200-watt output, hands free mode and shall be in "standby" mode awaiting

instruction. The siren shall offer radio broadcast, public address, wail, yelp, or piercer tones and hands free operation which shall allow the operator to turn the siren on and off from the horn ring if a horn/siren selector switch option is also selected.

HORN BUTTON SELECTOR SWITCH

A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.

AIR HORN ACTIVATION

The air horn activation shall be accomplished by the steering wheel horn button for the driver and a Linemaster model SP491-S81 switch mounted in passenger floor. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

MECHANICAL SIREN ACTIVATION

The mechanical siren shall be actuated by a Linemaster model SP491-S81 foot switch mounted in the front section of the cab for use by the driver and another mounted in passenger floor. A red momentary siren brake rocker switch shall be provided in the switch panel on the dash.

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

BACK-UP ALARM

A 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.

The instrument panel shall contain the following gauges:

One (1) electronic speedometer shall be included. 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.

One (1) electronic tachometer shall be included. The scale on the tachometer shall read from 0 to 3000 RPM.

One (1) two-movement gauge displaying primary system, and secondary system air volumes and integral LCD odometer/trip odometer shall be included on the lower portion of the LCD. The scale on the air pressure gauges shall read from 0 to 150 pounds per square inch (PSI). The air pressure scales shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate a low air pressure, as well as a message on the LCD screen. The odometer shall display up to 9,999,999.9 miles. The trip odometer shall display 9,999.9 miles. The LCD shall display Transmission Temperature in degrees Fahrenheit on the upper portion of the LCD. The LCD screen shall also be capable of displaying certain diagnostic functions.

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, fuel level, voltmeter, and an indicator bar displaying Diesel Exhaust Fluid (DEF) LED bar shall be included. The scale on the engine oil pressure gauge shall read from 0 to 120 pounds per square inch (PSI). The engine oil pressure scale shall be linear to operate with an accuracy of 1 degree of the measured. A red indicator light in the gauge shall indicate a low engine oil pressure, as well as a message on the LCD screen. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (F). The coolant temperature scale shall be linear to operate with an accuracy of 1 degree of the measured data with a red indication zone on the gauge showing critical levels of air pressure. A red indicator light in the gauge shall indicate high coolant temperature, as well as a message on the LCD screen. The scale on the fuel level gauge shall read from empty to full as a percentage of fuel remaining. An amber indicator light shall indicate low fuel at 25% tank level. The scale on the voltmeter shall read from 10 to 16 volts with a red indication zone on the gauge showing critical levels of battery voltage. A red indicator light shall indicate high or low system voltage, as well as a message on the LCD screen. The scale on the DEF LED bar will consist of four (4) LEDs displaying levels in increments of 25% of useable DEF in green. Upon decreasing levels, the indicator bar will change colors to notify the driver of decreasing levels of DEF and action will be required. An amber indicator light shall indicate low levels of DEF, as well as a message on the LCD screen and an audible alarm.

The instrument panel shall include a light bar that contains the following LED indicator lights and produce the following audible alarms in applicable configurations:

RED LAMPS

Stop Engine-indicates critical engine fault
Air Filter Restricted-indicates excessive engine air intake restriction
Park Brake-indicates parking brake is set
Seat Belt Indicator-indicates when a seat is occupied and corresponding seat belt remains unfastened
Low Coolant-indicates engine coolant is required

Bidder Complies

Yes or No

AMBER LAMPS

MIL-indicates an engine emission control system fault
Check Engine-indicates engine fault
Check Trans-indicates transmission fault
High Transmission Temperature-indicates excessive transmission oil temperature
ABS-indicates anti-lock brake system fault
Wait to Start-indicates active engine air preheat cycle
HEST-indicates a high exhaust system temperature
Water in Fuel-indicates presence of water in fuel filter
DPF-indicates a restriction of the diesel particulate filter
Regen Inhibit-indicates regeneration has been postponed due to user interaction
Range Inhibit-indicates a transmission operation is prevented and requested shift request may not occur.
SRS-indicates a problem in the RollTek supplemental restraint system
Check Message-Turn Signal On
Check Message-Door Ajar
Check Message-Cab Ajar
Check Message-ESC Active
Check Message-DPF Regen Active
Check Message-No Engine Data
Check Message-No Transmission Data
Check Message-No ABS Data
Check Message-No Data All Communication with Vehicle Systems Has Been Lost
Check Message-Check Engine Oil Level
Check Message-Check Washer Fluid Level
Check Message-Check Power Steering Fluid Level
Check Message-Low Transmission Fluid Level
Check Message-Check Coolant Level

GREEN LAMPS

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 active
OK to Pump-indicates the pump engage conditions have been met
Pump Engaged-indicates the pump is currently in use
Auxiliary Brake-indicates secondary braking device is active

BLUE LAMPS

High Beam Indicator

CONSTANT AUDIBLE ALARMS FROM GAUGE PACKAGE

High Trans Temp

High or Low Voltage
Seatbelt
Check Engine
Check Transmission
Stop Engine
Low Air Pressure
Fuel Low
Water in Fuel
ESC
High Coolant Temperature
Low Engine Oil Pressure
Low Coolant Level
Low DEF Level
Air Filter Restricted
Extended Left and Right Turn Remaining On
Cab Ajar
Door Ajar
ABS System Fault
SRS (Supplemental Restraint System) Fault

EXTERNAL AUDIBLE ALARMS

Air Filter
Cab Ajar
Door Ajar
Seatbelt
Check Engine
Stop Engine
Low Air Pressure
Water in Fuel
Low DEF
ABS System Fault
SRS (Supplemental Restraint System) Fault
High or Low Voltage

BACKLIGHTING COLOR

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

CAMERA

Dual heavy duty rearview cameras, complete with an LCD display monitor shall be supplied. One (1) camera shall be mounted in rear installation in the body to afford the driver a clear view

to the rear of the vehicle and one (1) shall be mounted on the officer side of the cab below windshield ahead of the front door at approximately the same level as the cab door handle.

The cameras shall be wired to a 7.00 inch flip down monitor which shall include a color display and day and night brightness modes installed above the driver position. The rear camera shall activate when the transmission is placed in reverse and the right camera shall activate with the right side turn signal.

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

The cab and chassis shall include diagnostic software, shipped loose, with the vehicle. The software kit shall include an interface module with connectors to link a laptop computer to the vehicle for diagnostic purposes. Also OBD engine diagnostics port with truck industry standard shall be installed. (I.E. Local shop does not need special cable for engine diagnostics.)

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 end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

CHASSIS OPERATION MANUAL

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

ENGINE AND TRANSMISSION OPERATION MANUALS

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

(1) Digital copy of the Engine Owner's manual

(1) Digital copy of the Transmission Operator's manual

(1) Hard copy of the Engine Operation and Maintenance manual with CD

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

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

CHASSIS MODIFICATIONS

TRANSMISSION SHIFT LOCK-ALLISON-3000 EVS

The transmission shall have a shift lock-up to keep the automatic transmission in direct gear during pumping operations. The transmission shift lock-up shall be automatically activated when the pump is placed in gear and deactivated when the pump is taken out of gear.

EXHAUST

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

The exhaust pipe shall discharge engine exhaust to the right side of the apparatus with tip to interface with Magna-grip exhaust system.

MUDFLAPS

Anti-sail mud flaps, with manufacturers' logo, shall be installed behind the rear wheels.

REAR TOW BAR

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

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

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

HELMET STORAGE

Compartment under rear seats shall be labeled for helmet storage.

FUEL FILL

The fuel fill of the custom chassis shall be in the driver's side rear fender area and have a painted stainless-steel door and be labeled: "DIESEL FUEL ONLY"

CAB TILT CONTROL

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

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

EMS COMPARTMENT

Two (2) EMS compartments, in rear facing seat locations to maximize storage and painted to match interior color.

One adjustable shelf shall be provided.

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

The compartments shall be constructed of aluminum.

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

COMPARTMENT LIGHT

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

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

RADIO ANTENNA MOUNT

An antenna mounting base, NMO mount with 17 feet of coax cable and weatherproof cap shall be provided for to interface with Motorola APX8500 two-way radio.

The mount shall be located on the cab roof just to the rear of the officer seat.

The cable shall be routed to the officer side interior for customer to route to the instrument panel if needed.

Bidder Complies

Yes or No

PUMP CONTROL

Provisions shall be made for placing the pump drive system in operation using controls and switches that are identified and within convenient reach of the operator.

A "Pump Engaged" indicator shall be provided in the driving compartment and on the operator's panel to indicate that the pump shift process has been successfully completed. An "OK to Pump" indicator shall be provided in the driving compartment to indicate that the pump is engaged, the chassis transmission is in pump gear, and the parking brake is engaged.

The fire pump-shift system shall be equipped with a means to prevent unintentional movement of the control device from its set position. The system shall include a nameplate indicating the chassis transmission shift selector position to be used for pumping and located so that it can be easily read from the driver's position.

The system shall include the applicable NFPA standard interlocks, pump shift and OK TO PUMP indicator lights in the cab and pump panel. The fire pump system shall be equipped with an interlock system to ensure that the pump drive system components are properly engaged in the pumping mode of operation so that the pumping system can be safely operated from the pump operator's position.

If applicable, the secondary braking device shall be automatically disengaged for pumping operations.

PUMP

HALE QMAX or Waterous CS series 1500 GPM single stage midship mounted centrifugal pump.

The pump must deliver the percentage of rated capacity at the pressure listed below:

100% of rated capacity at 150 PSI net pump pressure
100% of rated capacity at 165 PSI net pump pressure
70% of rated capacity at 200 PSI net pump pressure
50% of rated capacity at 250 PSI net pump pressure

PUMP ASSEMBLY

1. The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 1500 GPM (US GPM), NFPA-1901 rated performance.

2. The entire pump will be assembled and tested at the pump manufacturer's factory.

PUMPER SPECIFICATIONS

Bidder Complies

Yes or No

3. The pump shall be driven by a drive line from the truck transmission. The engine shall provide horsepower and RPM to enable pump to meet and exceed its rated performance.

4. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 PSI.
The pump shall be fully tested at the pump manufacturer's factory to performance specs as outlined by the latest NFPA Pamphlet No. 1901. Pump will be free from objectionable pulsation and vibration.

5. The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI. All moving parts in contact with water shall be of high quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron not acceptable.

6. Pump body shall be horizontally split, on a single plane in two sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis.

7. The pump shall have one double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance. (No exceptions.)

8. Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing to be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. (No exceptions.) The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

9. The pump shaft shall have a mechanical seal located on the inlet side of the pump.

10. Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined, hand ground, and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

11. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency. (No exceptions.)

12. The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished under packing with galvanic corrosion (zinc foil separators in packing) protection for longer shaft life. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

Bidder Complies

Yes or No

GEARBOX

1. The gearbox shall be assembled and tested at the pump manufacturers factory. (No Exceptions.)

2. Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. of torque of the engine. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature. The gearbox shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

3. The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.

4. All gears both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life, smooth quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust. (No exceptions.)

5. The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

6. If gearbox is equipped with a power shift, the shifting mechanism shall be a heat-treated, hard-anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.

7. For automatic transmissions, three green warning lights shall be provided to indicate to the operator(s) when the pump has completed the shift from Road to Pump position. Two green lights to be in the truck driving compartment and one green light on pump operators panel adjacent to the throttle control. For manual transmissions, one green warning light will be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

ANODE SYSTEM

Two (2) anodes shall be installed in the pump to prevent damage caused by galvanic corrosion within the pump.

One (1) installed in the suction side of the pump and one (1) installed in the discharge side of the pump.

The anodes should be inspected every 12 months and replaced when over 75% of the zinc has been consumed. Performance of the anode life will vary with water quality and PH.

PRESSURE CONTROL MECHANISM

The pump will be equipped with an automatic pressure control governor and shall be FRC In-control 400.

PRIMING PUMP

Trident Air primer shall be installed.

PIPING

All piping shall be heavy duty schedule 40, galvanized iron pipe.

Whenever possible, sweep type elbows shall be utilized in order to reduce friction loss, thread-in 45's and 90's will be used elsewhere. Victaulic or rubber couplings shall be used where necessary to allow flexing of plumbing which will prevent damage or loosening of the piping if connected rigidly.

All threaded joints shall have non-hardening type sealant for easy removal for repairs.

All piping, including intake and discharge lines shall be hydrostatically tested.

A vacuum test shall be applied to the pump, plumbing, and valves to test for leaks.

The system shall be tested and shall show minimum loss of no more than 10 inches of vacuum over a 5 minute period as required by NFPA section 16.13.6.4.

AKRON VALVES

All pump intake and discharge valves shall be AKRON 8000 Heavy Duty swing-out series. The valves shall have an all brass body with flow optimizing stainless steel ball, and dual polymer seats. The valves shall be capable of dual directional flow while incorporating a self-locking ball feature using an automatic friction lock design and specially designed flow optimizing stainless steel ball. All stainless-steel parts must be 316 grade for increased resistance to corrosion. The valve shall not require the lubrication of seats or any other internal waterway parts, and be capable of swinging out of the waterway for maintenance by the removal of six bolts. The valves shall carry a ten (10) year manufacturer's warranty. The valve shall be manufactured and assembled in the United States.

INTAKE RELIEF VALVE

An intake relief valve shall be installed on the intake side of the pump, preset at 125 PSI.

Bidder Complies

Yes or No

VENTED LUG CAPS AND PLUGS

All intake and discharge plugs and caps and plugs shall be vented lug type designed to relieve trapped pressure and help reduce possible operator injuries.

U.L. CERTIFICATION

The apparatus shall be completely tested and approved by Underwriters Laboratories Incorporated in accordance with their standard practices for pumping engines.

Test results shall be forwarded to the customer upon delivery.

Copies of the Pump Manufacturer's Certification of Hydrostatic Test, and Manufacturer's Record of Pumper Construction Details shall be supplied upon delivery.

STEAMER INLETS

Two (2) 6" steamer inlets shall be provided on the pump panels, one (1) left side and one (1) on right side.

Both to have screens and chrome caps with long handles.

SUCTION-LEFT SIDE

A 2-1/2" suction valve shall be installed on the left side of the unit with the valve body mounted behind the pump panel, with a 2-1/2" NST chrome inlet swivel, chrome plug and chain, and removable inlet strainer.

TANK TO PUMP

There shall be one 3" gated tank to pump line piped to the tank sump.

Piping from the sump to the valve shall be 4" diameter.

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

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

Control will be located on the operator's panel with a function plate. (Can be manual or air actuated.)

TANK FILL - 2-1/2"

There shall be a 2-1/2" tank refill line installed with a 2-1/2" inline valve.

Valve shall be controlled at the pump operators panel and will be clearly marked "TANK REFILL/PUMP COOLER".

CROSSLAY HOSEBEDS W/ 2" PLUMBING

Two (2) speedlays shall be installed to the left of pump compartment utilizing though body design for loading from the ground.

Each section of the speedlays shall be capable of holding 200' of 1-3/4" double jacketed hose in a double stack load.

A 2" mechanical swivel with 1-1/2" NST hose connector shall be used in each speedlays to provide access of hose in either direction.

Stainless steel rollers with nylon guides shall be mounted on both ends and below speedlays.

Each speedlays section shall have one 2" brass valve and shall be controlled at the operators' panel.

CROSSLAY HOSEBED W/ 2-1/2" PLUMBING

One (1) speedlay shall be installed over the 2 1 ¾ "speedlays.

The speedlay shall be capable of holding 200' of 2-1/2" double jacketed fire hose in a double stack load.

A 2-1/2" mechanical swivel hose connector shall be used in the crosslay to provide access of hose in either direction.

Poly speedlay trays shall be provide on all speed lays with two (2) extra trays.

VINYL FLAPS/CARGO NET

Each end of the crosslay or speed lay bins shall have Black vinyl flaps or cargo netting installed on each end to retain the hose load. The flaps shall be secured with shock cord fasteners.

Meets NFPA 15.10.7 - Any hose storage area shall be equipped with a positive means to prevent unintentional deployment of the hose from the top, side, front, and rear of the hose storage area while the apparatus is underway in normal operations.

DUNNAGE COMPARTMENT

Each side of the dunnage compartment shall be enclosed with 12 gauge satin finish stainless steel.

PUMPER SPECIFICATIONS

Bidder Complies

Yes or No

DUNNAGE COMPARTMENT

Will contain 150’ of 1” booster line and reel mounted on drivers’ side rear of dunnage area.

TRASHLINE - 1-3/4" W/2.5" PLUMBING

One (1) trash line discharge shall be piped to the front bumper with 2.5" piping and 2.5" valve.

Discharge shall terminate above the left front bumper with a 2.5" hose swivel with 1.5" NST thread reducer

A control handle shall be provided on the pump operators panel.

DISCHARGE LEFT SIDE

A 2-1/2" discharge shall be located on the left side pump panel and be controlled from the operator's panel.

Discharge shall terminate with a 2-1/2" NST 30 degree turn down with chrome cap and retainer chain.

DISCHARGE RIGHT SIDE

A 2-1/2" discharge shall be located on the right side pump panel and be controlled from the operator's panel.

Discharge shall terminate with a 2-1/2" NST 30 degree turn down with chrome cap and retainer chain.

DISCHARGE RIGHT SIDE

A 3" or larger large diameter discharge shall be located on the right side pump panel and be controlled from the operator's panel.

Discharge shall terminate with appropriate NST x 5" 30 degree Storz adapter with blind cap and retainer chain.

2-1/2" LEFT REAR DISCHARGE

A 2-1/2" discharge shall be piped to the left rear of the hose bed and be controlled form the operator's panel.

Discharge shall terminate with a 2-1/2" NST 30 degree turn down, with chrome cap and retainer chain.

Bidder Complies

Yes or No

3" DECK GUN DISCHARGE

One (1) 3" deck gun discharge shall be plumbed to center of the dunnage area over the pump.

Piping will be firmly supported and braced.

The discharge shall be controlled at the operator's panel.

Discharge shall terminate with 4 bolt flange.

PORTABLE DECK GUN

One deck mount master stream device with fog and stacked smooth tips that can be raised to working position and lowered for storage and is portable.

AKRON SLO-CLOZ

An Akron Slo-Cloz or comparable device shall be provided on each 3" discharge valve to limit the opening of the valve to no faster than 3 seconds per N.F.P.A. specifications.

The hydraulic device shall be operable from -40 deg. F to 140 deg. F.

The device shall be made of corrosion-resistant materials and shall not add more than 1-1/2" to the valve height.

PUMP MASTER DRAIN

A master drain shall be installed that will have the capacity to drain all lines and main pump at the same time. The master drain will be mounted on the left side panel and will be readily accessible.

DRAIN VALVES

The drain valves shall be 3/4" ball brass drain valves with chrome-plated lift lever handles and ergonomic grips. Each lift handle grip shall feature built-in color-coding labels and a verbiage tag identifying each valve. The colors labels shall also include valve open and close verbiage. The drain valves shall located in the lower portion of the pump panels.

ENGINE COOLER

The supplementary heat exchanger cooling system supplied on the chassis shall be completed to the panel to permit water from the discharge side of the pump to be circulated through the engine cooling system.

Coolant inlet and outlet shall be continuous, preventing intermixing of engine coolant and pump

water.

The heat exchanger shall be of brass construction, with control valve located on operator's panel.

INDEPENDENT PUMP MODULE

The pump module shall be a self-supported structure mounted independently from the body and chassis cab. The pump module shall be fabricated and constructed from the same material as the body. The design shall allow for normal frame deflection without imposing stress on the pump module structure. The pump module shall consist of a welded tubular stainless steel frame work, properly braced to withstand chassis frame flexing. The pump module shall be bolted to the frame rails of the chassis.

SIDE MOUNTED OPERATOR'S PANEL

CONSTRUCTION

The pump house shall be a properly supported structure mounted between the body and chassis cab and shall be bolted to the chassis frame rails. The panel shall be supported by 1-1/2" stainless steel tubing.

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

Left and right-side pump house panels shall consist of upper and lower removable panels. The left side of the pump house shall consist of an upper hinged panel containing all required gauges.

The lower panel shall contain left side specified discharges, inlets, drains, and pump controls.

The right side of the pump house shall consist of a double vertically hinged access door. The door will be swing open style with quick opening latch.

A separate lower panel shall contain the specified right side mounted discharges and inlets and their respective drains.

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

INNOVATIVE CONTROLS PUSH/PULL VALVE CONTROL HANDLES

For valve actuation, the apparatus pump panel shall be equipped with Innovative Controls side mount valve controls.

The ergonomically designed push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and verbiage. The control rod, double laminated locking clips and rod housing shall be stainless steel and provide a true positive lock that will eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall minimize rod deflection, never need lubrication, and ensure consistent long term operation. Where required locking 1/4 turn push-pull T-handle controls will be provided.

The control assembly shall include a decorative chrome plated zinc panel mounting bezel and 4 mounting bolts.

RUNNING BOARDS

Running boards shall extend from the front of the side compartments forward to the back of the cab and be approximately 11" deep.

Running boards shall be constructed of 1/8" aluminum treadplate.

The rear edge shall be formed upward 1-1/2" to provide a kick strip along the bottom of the pump panel.

The outer edge shall be bent downward to provide a safety rail.

Running boards are supported by 1-1/2" stainless steel tubing welded to the panel framing and shall be able to support a minimum of 500 pounds per NFPA section 11-7.2.

PANEL LIGHTING

The left side panel shall be illuminated by five (5) Whelen (model 2631-000030) 2.25" x 6.00" LED lights with clear lens.

Lights shall be mounted across the top of the gauge panel and shall be protected by a full width polished stainless steel shield.

Lights are controlled by a master panel mounted light switch.

One (1) pump panel light shall come on when the pump is shifted into gear from inside the cab, affording the operator illumination when first approaching the control panel.

Bidder Complies

Yes or No

IDENTIFICATION LABELS FOR PUMP PANEL

Innovative Controls verbiage label bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These labels shall be designed and manufactured to withstand the specified apparatus service environment.

The verbiage label bezel assemblies shall include a chrome plated panel mount bezel with durable easy to read UV resistant polycarbonate inserts featuring the specified verbiage and color coding. The UV resistant polycarbonate verbiage and color inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

SIDE MOUNTED OPERATOR'S PANEL

The following items shall be located on the left side pump panel:

*Individual 0-400# compound discharge gauges shall be provided for each 1.5" or larger discharge

*One (1) -30 to 400 psi master pressure gauge

*One (1) -30 to 400 psi master vacuum gauge

*One (1) auxiliary engine cooler control (heat exchanger)

*Two (2) UL test connections

*One (1) master pump house lighting switch

*Pressure Governor Controls

*One (1) primer control

*All discharge controls

*One (1) tank fill/pump bypass control

*One (1) tank to pump valve control

*One (1) pump ENGAGED indicator light

*One pump certification plate

*One liquid level meter with sensor in the water tank

4.5" MASTER GAUGES

The master intake and master discharge gauges shall be 4" diameter pressure gauges. Each gauge shall have a one-piece die-cast brass case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear scratch resistant molded crystals with captive O-ring seals shall be used to ensure distortion free viewing and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F. Each gauge shall meet ANSI B40.1 Grade 1A requirements with an accuracy of +/- 1% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated brass bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative chrome-plated mounting bezels that incorporate valve-identifying verbiage.

The master gauges shall be installed on the pump panel no more than 6 inches apart. The gauge on the left shall be the master pump intake gauge and display a range from -30 to 400 psi with Black graphics on a White background. The gauge on the right shall be the master pump discharge gauge and display a range from -30 to 400 psi with Black graphics on a White background.

2-1/2" GAUGES

The valve discharge gauges shall be 2 ½" diameter pressure gauges. Each gauge shall have a one-piece die-cast brass case that integrates the valve stem connection, movement support, and bourdon tube support into a single unit that eliminates distortion and leakage. Clear scratch resistant molded crystals with captive O-ring seals shall be used to ensure distortion free viewing and to seal the gauge. The gauges shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

Each gauge shall exceed ANSI B40.1 Grade B requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy. A polished chrome-plated brass bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauges shall be installed into decorative chrome-plated mounting bezels that incorporate valve-identifying verbiage and color labels. The gauges shall display a range from 0 to 400 psi with Black graphics on a White background.

Bidder Complies

Yes or No

WATER LEVEL MONITOR

An FRC Tankvison Maxvison Series Tank Level Monitor System shall be installed. The system shall include an electronic display module, a pressure transducer-based sender unit, and a 10' connection cable. The display module shall show t**1**he volume of water in the tank using 10 superbright easy-to-see LEDs. Tank level indication is enhanced by the use of green LEDs at the full and near-full levels, amber LEDs between ¾ and ¼ tank levels, and red LEDs at the near-empty and empty levels. A wide-angle diffusion lens in front of the LEDs creates a 180° viewing angle. The electronic display module shall be waterproof and shock resistant being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome plated panel-mount bezel with a durable easy-to-read polycarbonate insert featuring blue graphics and a water icon.

All programming functions shall be accessed and performed from the front of the display module. The programming includes self-diagnostics, manual or self-calibration, and networking capabilities to connect remote slave displays. Low tank level warnings shall include flashing red LEDs starting below the ¼ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm. The display module shall receive an input signal from a pressure transducer. This stainless steel sender unit shall be installed on the outside of the water tank near the bottom. All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Location of water tank level monitor shall be on the pump operator's panel and sides of cab behind rear door.

3.00" DIRECT TANK FILL

There shall be one (1) 3.0" Akron Brass style 8830 valve provided and terminate with a Red Head 30 degree stainless steel elbow, with Trident chrome plug with retainer chain. A 3/4" bleeder will be installed.

The valve will be installed on the passenger side pump panel.

UPF POLY-TANK IIE

Tank shall be 1000 gallons.

SPECIFICATIONS

The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. The purpose of the markings and notice is to inform department personnel who store, stock, or use the tank that the unit is under warranty.

Bidder Complies

Yes or No

CONSTRUCTION

The UPF POLY-TANK II shall be constructed of 1/2" thick PT2E polypropylene sheet stock. This material shall be a non-corrosive stress relieved thermo-plastic, natural in color, and U.V. stabilized for maximum protection. The booster 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 nitrogen welded and tested for maximum strength and integrity. The top of the booster tank is fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removability. The transverse swash partitions shall be manufactured of 3/8" PT2E polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" PT2E polypropylene (natural in color) and extend from the floor of the tank through the cover to allow for positive welding and maximum integrity. 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 welded to each other as well as to the walls of the tank.

FILL TOWER AND COVER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT2E polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The tower shall be located in the left front corner of the tank unless otherwise specified by the purchaser in Special Provisions. The tower shall have a 1/4" thick removable polypropylene screen and a PT2E polypropylene hinged-type cover. Inside the fill tower, approximately 4" down from the top, shall be fastened a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4" that is designed to run through the tank, and shall be piped behind the rear wheels where specified to provide maximum traction for wheels.

The tank cover shall be constructed of 1/2" thick polypropylene, natural in color, and UV stabilized, to incorporate a multi three-piece design which allows for individual removal and inspection if necessary. The tank cover shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" polypropylene dowels spaced 30" apart. These dowels shall extend through the covers and become welded to the transverse partitions. This will assist in keeping the cover rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

SUMP

There shall be one (1) sump constructed of 1/2" PT2E polypropylene and be located in the left front quarter of the tank. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" NPT threaded outlet on the bottom for a

drain plug. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump.

OUTLETS

There will be two (2) standard tank outlets: one for tank-to coupling; and, one for a tank fill line which shall be a minimum of 1" NPT coupling. All tank couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

MOUNTING

The UPF POLY-TANK IIE shall rest on the body crossmembers with an unsupported area not to exceed 760 sq. in. on tanks up to 40" in height. On tanks over 40" in height, an unsupported area of not more than 530 square inches must be maintained. All tanks shall be isolated from the crossmembers with a minimum of 1/4" hard rubber strips on tanks under 2,000 gallons and 1/2" hard rubber strips on 2,000-gallon tanks and over, 2" to 3" wide with a minimum of 60D hardness. The tank shall sit cradle mounted, either using four (4) corner angles of 4" x 4" x 4" x 0.250" welded directly to the body cross members or the use of 2" x 2" x 0.250" angle iron which will extend around the entire perimeter of the tank and welded to the body cross members.

In each case, the entire perimeter of the bottom of the tank wall be supported. Support under the upper side walls is not required. The support frame or angles will keep the tank from shifting front to rear or side to side. Although the tank is designed on the free floating suspension principle, it shall be required that the tank have restraints halfway between the front and the rear of the tank. These restraints shall be made of 3" x 3" 1/4" angle approximately 6" long. The restraint does not directly contact the top of the tank.

The tank capacity shall be 1000 gallons and will be equipped with a 6" vent/overflow.

SQUARE BACK BODY DESIGN

The rear side body compartments and the body side walls shall extend all the way to the rear of the apparatus and shall be squared off design with minimum 12” step bumper.

TRIM

The top of all side body compartments shall be covered with bright aluminum tread plate.

Top overlay edges shall be angled downward and extended over the outer body panel approximately 1.00".

The rear of the unit, not covered with reflective chevron material, shall be covered with bright aluminum tread plate.

Front exterior wall of the front compartments shall be covered with bright aluminum tread plate.

Side body support posts shall be covered with bright aluminum tread plate.

All aluminum edges shall be sealed with a silicone base caulking to prevent water from being trapped between the stainless and aluminum surfaces.

STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body shall meet NFPA #1901 anti slip standards. Aluminum tread plate utilized for stepping, standing, and walking surfaces shall be No Slip Type. This material shall be certified to meet the NFPA #1901 standard.

DRIP RAILS

Bright aluminum "J" channel shall be provided over each lower side body compartment and at the front and rear of the compartments.

EXTRUDED ALUMINUM RUB RAILS

Rub rails shall be provided and installed below each side compartment. The rub rail assembly shall be constructed of 1.25" x 1.00" heavy-duty extruded aluminum tubing with 45 degree tapered poly end caps and will be DA finished.

WHEEL WELLS

Wheel wells and cabinetry are to be designed so road debris will not be trapped on top of the cabinets.

Full one piece circular; 24" deep wheel well liners shall be installed. The fender flares shall be bright polished stainless steel and are attached to the wheel well using stainless steel bolts.

REAR LIGHT PANELS

Rear compartment wall will serve as the light panel for the backup, stop, and turn lights and will be constructed of 12 gauge type 304 stainless steel. Inner removable panels shall provide protection for the rear light wiring.

REMOVAL OF BODY

The completed body with all related parts will be able to be removed in its entirety and accompany the water tank when removed.

Bidder Complies

Yes or No

FASTENERS

All fasteners used in securing components to the body shall be type 304 stainless steel.

COMPARTMENTS

Compartments shall be provided per specifications on each side of the body.

The compartments are to be as large as possible in proportion to the cab to axle chassis dimension.

Compartments shall be formed from one piece of metal when possible.

Exterior of compartments are welded continuously.

Compartments are heliarc welded to the main body supports.

FLOOR MATTING

All compartment floors shall be lined with black poly plas matting with tapered edging.

HOSE BED

The hose bed front and side walls shall be free of all sharp objects to prevent hose damage and shall accommodate 1200’ of 5” LDH and one 3” blitz attack line on left side with divider to accommodate.

FULL WIDTH HOSE BED WITH EXTERIOR SMOOTH PAINTED PANELS

The hose bed shall be extended the full width of the apparatus body with exterior smooth side panels. The side panels shall be painted job color.

HOSE BED CAPACITY

The hose bed shall be capable of holding the following hose:

1200 Feet of 5.00" LDH hose
250 Feet of 3.00" DJ hose

HAND RAILS

Access hand rails shall be 1-1/4" in diameter extruded aluminum tubing with ribbed rubber inserts. Access rail escutcheons and brackets shall be chrome plated and attached with stainless steel bolts. Anchoring of posts and framing members for handrails of all types shall capable of withstanding a load of at least 225 pounds applied in any direction at any point along the rail.

Hand rails and handholds shall be constructed so that three points of contact (two hands and one foot, or one hand and two feet) can be maintained at all times while ascending and descending.

VERTICAL HAND RAILS

Two (2) 48" long hand rails shall be mounted vertically at the rear of the apparatus, one on each side of the rear compartment.

HORIZONTAL HAND RAILS

One (1) 72" long hand rail shall be mounted horizontally just below the hosebed.

HORIZONTAL HAND RAILS

Two (2)12" long hand rail shall be mounted horizontally one each side on the top of the dunnage compartment.

FOLDING ACCESS STEPS

There shall be four (4) 35 square inch NFPA approved chrome folding steps installed at the rear of the body to allow easy access to the hose bed with built in LED lights.

FOLDING ACCESS STEPS

There shall be six (6) additional 35 square inch NFPA approved chrome folding steps installed as directed at the pre-paint inspection with built in LED lights.

LADDER COMPARTMENT

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

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

The compartment will be designed to hold a 14' roof ladder and 24' extension ladder, 10' attic ladder and two (2) pike poles.

Compartment will be fully enclosed and have a single vertically hinged aluminum diamond plate door with stainless steel D'Ring latching handle.

Bidder Complies

Yes or No

SPEEDY DRY HOPPER

A custom built speedy dry hopper will be fabricated and installed.

The hopper will be designed to hold as much dry absorbent material as possible and will have a hinged top cover for adding material to the hopper.

The bottom of the discharge pipe will be high enough to slide a 5-gallon pail underneath.

The dump system shall include a slide gate installed inside the compartment discharge pipe.

BACK BOARD & STOKES BASKET STORAGE

Back boards and stokes basket shall be stored in a location to be determined.

AIR BOTTLE STORAGE COMPARTMENT (SINGLE BOTTLE)

One (1) spare air bottle compartment shall be provided and located in the left rear wheel well areas.

The compartment shall be fabricated of stainless steel and lined to prevent vibration.

Compartment will have painted stainless steel door and be labeled: "SPARE SCBA CYLINDER"

AIR BOTTLE COMPARTMENTS (DOUBLE BOTTLE)

Three (3) double spare air bottle compartments shall be provided and located one each side in the forward portion of the wheel well areas and one (1) in the right rear wheel well area.

The compartments shall be fabricated of stainless steel and lined to prevent vibration.

Compartments will have painted stainless steel doors and be labeled: "SPARE SCBA CYLINDERS"

SHELF TRACKING, ADJUSTABLE

A total of three (3) compartments shall be furnished steel tracking installed to allow for installation of adjustable shelves. The tracking shall be installed vertically on the sides of the compartment walls.

LOCATION: To be determined by Greeneville Fire Department at pre-paint inspection or by manufacturer ideas using equipment list provided.

SHELVING - ADJUSTABLE

A total of six (6) adjustable shelves shall be provided and installed in customer specified location or recommended location from manufacturer.

Shelf construction where specified shall be rigid with 2" reinforcement on the front and rear, and fabricated of 3/16" aluminum.

The shelving shall be adjustable by means of a threaded tightener that slide in a track to allow precise adjusting height.

LOCATION: To be determined by Greeneville Fire Department at pre-paint inspection or by manufacturer ideas using equipment list provided.

PUC BOARD MOUNTING BOARD

PUC board will be installed on the back wall of the specified compartments to allow for equipment mounting.

Quantity: Three (3) compartments plus both side back wall inside of cab.
Location: To be determined by Greeneville Fire Department at pre-paint inspection or by manufacturer ideas using equipment list provided

TRAYS - PULL OUT

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

Sliding tray where specified shall be mounted in a manner that provides for maximum clearance overhead.

The tray shall have a minimum capacity of 250 pounds in the fully extended position.

The side mounted slides are to be equipped with ball bearings for ease of operation.

Tray will lock automatically in the open and closed positions. Manual type locks will not be acceptable.

LOCATION: To be determined by Greeneville Fire Department at pre-paint inspection or by manufacturer ideas using equipment list provided

RESCUE TOOL TRAY - PULL OUT

One (1) slide out tray shall be provided and installed in customer specified location. This tray will be designed to hold customer's rescue tools.

Custom designed brackets shall be provided for holding Jaws, cutters, rams, etc.

Sliding tray, or mounting carousel, where specified shall be mounted in a manner that provides for maximum clearance overhead. The tray shall have a minimum capacity of 250 pounds in the fully
extended position.

The side mounted slides are to be equipped with ball bearings for ease of operation.

Trays will lock automatically in the open and closed positions. Manual type locks will not be acceptable.

HOSEBED TARP

A Red vinyl hosebed cover shall be provided with twist lock fasteners and rear weighted flap.

ROLLUP DOOR

The rear compartment shall have a ROM Robinson Roll-o-matic compartment door with "satin" finish.

Door features top, side and bottom seals to keep dirt and moisture out of the compartment.

Interlocking end shoes allow the door to operate as one unit, eliminating left-to right movement.

Side track finishing flange eliminates gap between the shutter body, keep moisture out.

Interlocking slats prevent knife penetration, offering both maximum security and a high-image appearance for custom striping and painting.

Inner seal between each slat prevents moisture from entering compartment and allows quieter performance by preventing metal-to-metal contact.

Continuous, one-piece lift bar.

One-piece aluminum side track enables the shutter to slide up and down without obstruction and provides quick installation.

Heavy duty finger pull provides easy, one-hand operation.

Anodized aluminum sill plate protects the edge of the compartment.

Includes ROM magnetic door ajar and compartment light switch unit. The magnetic door ajar switch is completely contained within the door as part of the shutter design.

COMPARTMENT DOORS (Option 1)

All six side compartments shall have ROM Robinson Roll-o-matic compartment doors with "painted" finish.

Doors feature top, side and bottom seals to keep dirt and moisture out of the compartment.

Interlocking end shoes allow the door to operate as one unit, eliminating left-to right movement.

Side track finishing flange eliminates gap between the shutter body, keep moisture out.

Interlocking slats prevent knife penetration, offering both maximum security and a high-image appearance for custom striping and painting.

Inner seal between each slat prevents moisture from entering compartment and allows quieter performance by preventing metal-to-metal contact.

Continuous, one-piece lift bar.

One-piece aluminum side track enables the shutter to slide up and down without obstruction and provides quick installation.

Heavy duty finger pull provides easy, one-hand operation.

Anodized aluminum sill plate protects the edge of the compartment.

Includes ROM magnetic door ajar and compartment light switch unit. The magnetic door ajar switch is completely contained within the door as part of the shutter design.

COMPARTMENT DOORS (Option 2)

Include options for slam doors for body.

Bidder Complies

Yes or No

12 VOLT ELECTRICAL SYSTEM

All wiring and electrical equipment shall meet N.F.P.A. 1901 (2009 edition) and SAE standards.

A master optical warning device switch that energizes all of the optical warning devices shall be provided.

The optical warning system shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right of way. The other mode shall signal that the apparatus is stopped and is blocking the right of way. Switching of modes shall be controlled by the parking brake.

All wiring to be GXL ultra high temperature cross link type.
Relay board features heavy duty components, visual diagnostics, and load management inputs. System is user friendly for trouble shooting.

A wiring diagram for the body electrical system shall be included with the apparatus.

JUNCTION BOX

The electrical junction box for all 12 volt wiring shall be located in a convenient location. It will be recessed into the compartment wall not to protrude into the storage area. It shall have a removable access panel.

The compartment shall be sealed and weather proof. All components in compartment shall have identification tags.

CLEARANCE LIGHTS

All required Clearance lights shall be provided at the rear and on each side of the unit to meet Federal regulations. <u>All lights will be (LED) Light Emitting Diode type with a five (5) year warranty.</u>

On apparatus 30 feet in length or longer, a turn signal shall be mounted approximately midway along the apparatus at approximately running board height.

LED STEP AREA LIGHTING

Four (4) step area lights shall be provided. One mounted each side on the front compartment face to illuminate the panel running board steps and two mounted at the rear of the unit to illuminate the rear tailboard step. These lights shall be activated when the parking brake is applied.

Whelen 2G series 4” round with 6 LED’s shall be utilized. Depending on body application the lights will either be mounted in a rubber grommet or surface mounted with a chrome flange.

HAZARD LIGHT

A red flashing light shall be located in the driving compartment, and shall be illuminated automatically whenever the apparatus parking brake is not fully engaged and any passenger or equipment compartment door is open, any ladder or equipment rack is not in the stowed position, a stabilizer system is deployed, a powered light tower is extended, or any other device is opened, extended, or deployed that creates a hazard or is likely to cause damage to the apparatus if the apparatus is moved. The light shall be marked "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

LICENSE PLATE LIGHT

One license plate light and bracket shall be provided on the rear of the unit.

EMERGENCY WARNING LIGHT SWITCH CONTROLS

All warning light switches shall be mounted in the cab in a readily accessible location.

The master switch and individual switches furnished with custom chassis shall be utilized to allow preselection of lights. The light switches are to be "rocker" type with an internal indicator light to show when the switch is energized. All switches to be properly identified and mounted in a removable panel for ease in servicing. Identification of the switches shall be done by either printing or etching on the switch panel.

WHELEN M6FCV4 QUAD CLUSTER REAR DOT LIGHTING

BACKUP LIGHTS

Two (2) Whelen model M6BUW Super LED backup lights

STOP/TAIL LIGHTS

Two (2) Whelen model M6BTT series Super LED Brake/Tail lights

DIRECTIONAL LIGHTS

Two (2) Whelen model M6T series Super LED arrow directional turn signal lights

The backup lights, stop/tail lights, and directional lights along with rear lower level warning

lights shall be installed on the lower rear face of the unit and shall be recessed in chrome plated flange.

COMPARTMENT LIGHTS

LED compartment lighting shall be provided in each compartment to provide total illumination of entire compartment.

All compartment lighting shall be automatic by the opening and closing of the door.

All main apparatus body compartments shall have door ajar switches.

LED GROUND LIGHTING

The apparatus shall be equipped with lighting capable of providing illumination at a minimum level of two (2) foot candle on ground areas within 30.00" of the edge of the apparatus in areas designed for personnel to climb onto the apparatus or descend from the apparatus to the ground level. Lighting designed to provide illumination on areas under the driver and crew riding area exits, which shall be activated automatically when the parking brake is set. Lights shall be installed in a manner that illuminates all walkways and steps for safe operation of the apparatus.

Whelen 5GC0CCR with 3 super LED's mounted in a stainless steel brackets shall be utilized.

One (1) light located each side under the panel running board.
Two (2) lights mounted under the rear step.

PUMP COMPARTMENT LIGHT

One (1) 10" LED pump compartment light shall be provided within the pump enclosure. The control switch shall be located on the pump operators panel.

NFPA APPROVED UPPER LEVEL LIGHT PACKAGE

ZONE A - FRONT UPPER

A cab roof light bar will be furnished with the custom chassis.

ZONE B & D - SIDE UPPER

Two (2) Whelen M7 Super LED lights with chrome bezels will be mounted one each side on the upper rear side corners of the body. The lights will have Red lens.

ZONE C - REAR UPPER

Two (2) Whelen M7 Super LED lights with chrome bezels will be mounted on the upper rear of

the body. The lights will have Red lens.

WHELEN LOWER LEVEL LIGHTING

ZONE A - LOWER

Two (2) LED lights shown under chassis section

ZONE B & D- SIDE LOWER

One (1) LED lights shown under chassis section

Two (2) M7 Super LED lights with chrome bezel and Red lens mounted one (1) each side in the rear body fender area.

ZONE C - LOWER

Two (2) M6 Super LED lights with Red lens mounted on the lower rear of the apparatus in M6FCV4 chrome housing.

Floodlight System

Four (4) FRC Spectra Max-S 12-volt LED telescoping lights.

Manuals

Detailed service, parts, operating, and installation manuals shall be provided by the tower manufacturer. Samples of such manuals shall be provided on request. A hard copy manual will be provided.

LETTERING

Lettering shall be provided to match current design of Greeneville Fire Dept.

REFLECTIVE STRIPING

A 6" wide black reflective stripe shall be applied to the unit in “Z” stripe pattern.

Per NFPA 15.9.3.1 this shall include at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the apparatus.

REFLECTIVE CHEVRON - NFPA 15.9.3.2

50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus, shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" in width.

Stripe Colors will be Red & Yellow.

EQUIPMENT

The following equipment shall be provided along with any necessary mounting brackets. All other NFPA required equipment shall be furnished and mounted by the purchaser.

10' FOLDING LADDER

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

14' ROOF LADDER

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

24' EXTENSION LADDER

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

FLAT HEAD AXE

One (1) 6 lb steel flat head axe with a fiberglass handle shall be supplied and mounted in customer specified location.

PICK HEAD AXE

One (1) 6 lb steel pick head axe with a fiberglass handle shall be supplied and mounted in customer specified location.

8' FIBERGLASS PIKE POLE

One (1) Duo-Safety Type FP, 8' fiberglass handle pike pole shall be provided consisting of a 8' hollow fiberglass pole 1-3/4" OD with a painted steel pike riveted to the pole.

Bidder Complies

Yes or No

PIKE POLE

One (1) Duo-Safety Type FP, 10' fiberglass handle pike pole shall be provided consisting of a 10' hollow fiberglass pole 1-3/4" OD with a painted steel pike riveted to the pole.

20LB ABC EXTINGUISHER

One (1) Amerex model FE-423 w/#810 bracket, 20 LB ABC Stored Pressure Dry Chemical Extinguisher shall be provided and mounted in customer specified location.

2-1/2 GALLON PRESSURE WATER EXTINGUISHER

One (1) Amerex model FE-240 w/810 bracket, 2-1/2 gallon pressure water extinguisher shall be provided and mounted in customer specified location.

WHEEL CHOCKS

Two (2) Zico SAC 44 folding wheel chocks will be provided with Zico SQCH-44-H horizontal holders.

The wheel chocks shall be mounted under the left front compartment.

SPANNER WRENCH SET W/HYDRANT WRENCH

One (1) set of Red Head style 148-3 spanner wrenches shall be provided and mounted in customer specified location. Includes (1) 105 Hydrant wrench and (2) 101 spanner wrenches with mounting bracket.

Location: To be determined by Greeneville Fire Department at pre-paint inspection.

SPANNER WRENCH SET

Two (2) sets of Red Head style 146-2 spanner wrenches shall be provided and mounted in customer specified location. Includes (2) 101 spanner wrenches with mounting bracket per set.

Location: To be determined by Greeneville Fire Department at pre-paint inspection.

Setcom 3 Person, Intercom
Wireless Headset System

Setcom Wireless Intercom System to accommodate three seated positions.

System to interface with Motorola APX 8500 mobile radio system.

Complete Installation and System test.

Bidder Complies

Yes or No

SAFETY FIRE VEST

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

TRAFFIC CONES

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

ADDITIONAL EQUIPMENT

Proposal shall include price of apparatus with mounted equipment from attached list. Proposal shall also include price of apparatus with only required equipment.

Proposal shall allow for Greeneville Fire Department to purchase equipment through vendors we currently utilize.

Equipment list is provided at the end of this document.

CONTRACT

Proposal shall include pricing to include options and individual equipment as related to the specification.

Proposal shall include delivery timeframe including acceptance testing and inspection, not to exceed ten (10) months from the time of contract.

The Town of Greeneville is prepared to enter into a contract with a vendor with the terms of: Up to $150,000 down payment with the remainder paid over the next four (4) years in equal annual payments.

The Town of Greeneville retains the right to reject any or all proposals, and to accept the proposal in the best interest of the Town.

Bidder Complies

Yes or No

EXCEPTIONS

In the column on the original specification mark “yes” or “no” to each bolded category, to signify compliance.

If any category is marked “no” an exception page shall be supplied, by the vendor, with the following information:

1. The reference page number from the original specification from the Greeneville Fire Department.
2. The reference page number from the vendor proposal of the non-compliance.
3. Category in non-compliance.
4. Please provide a detailed description of your alternative options for each exception.

Bidder Complies

Yes or No

ADDITIONAL EQUIPMENT LIST

- 4- Streamlight E-Spot Firebox LED hand lights w/ vehicle mounted chargers
- 6lb flathead axe with mounts (Leatherhead or Fire Hooks Unlimited)
- 6ft pike pole (Leatherhead or Fire Hooks Unlimited)
- Res Q Jacks deluxe kit (4 struts)
- Holmatro or Hurst Battery Powered Hydraulic Cutter with mount
- Holmatro or Hurst Battery Powered Hydraulic Spreader with mount
- Holmatro or Hurst Battery Powered Hydraulic Ram with mount
- Tempest Technology Variable Speed Electric PPV fan
- Honda 2200Kw Portable Generator
- 3ft D-handle pike pole with mount (Leatherhead or Fire Hooks Unlimited)
- 4ft D-handle pike pole with mount (Leatherhead or Fire Hooks Unlimited)
- 4ft pry bar with mount (Leatherhead or Fire Hooks Unlimited)
- 3ft pry bar with mount (Leatherhead or Fire Hooks Unlimited)
- 4ft D-handle plaster hook with mount (Leatherhead or Fire Hooks Unlimited)
- 10lb sledge hammer with mount (Leatherhead or Fire Hooks Unlimited)
- Halligan bar with mount (Leatherhead or Fire Hooks Unlimited)
- 36” Heavy Duty bolt cutters with mount (Fire Hooks Unlimited)
- Set of Irons (Halligan bar and flathead axe) with mount for cab interior (Leatherhead or Fire Hooks Unlimited)
- Inline Foam Eductor 1.5” inlet and outlet, 125 gpm with mount (Akron)
- 800’ – 1.75” Attack Hose, Combat Flex
- K12 Type Power Saw