

LEGAL NOTICE

INVITATION to BID

The **Town of Ridgefield** invites all interested parties to submit sealed bids on the following:

BID DUE DATE: Thursday, March 28, 2019

BID DUE TIME: 11:00 AM

BID ITEM: Fire Department - Engine Pumper and Tanker Truck

BID NUMBER: 19-09

Terms and conditions as well as the description of items being bid are stated in the specifications. **Specifications may be obtained at the following address:**

**Town of Ridgefield
Jacob Muller
400 Main Street
Ridgefield, CT 06877
203 - 431 – 2720**

The return bid envelope must be marked and addressed to the following:

**TOWN OF RIDGEFIELD
DIRECTOR OF PURCHASING
BID NUMBER: 2019-09
400 MAIN STREET
RIDGEFIELD, CT. 06877**

Bids must be received no later than the date and time stated above at the Purchasing Director's office on the second floor. **For further information,** please call **Jacob Muller** at (203) 431-2720 or E-Mail at **purchasing@ridgefieldct.org**

Bid Documents available at www.ridgefieldct.org in the Purchasing section under Departments

Results may be viewed at www.ridgefieldct.org in the Purchasing Section under Departments after the bid opening.

**TOWN OF RIDGEFIELD
CONNECTICUT**

BOARD OF SELECTMAN

INSTRUCTIONS TO BIDDERS

1. Submit proposals in a sealed envelope plainly marked with bid number to identify this particular proposal.
2. Withdrawals of or amendments to bids received later than the time and date specified for bid opening will not be considered.
3. The Board of Selectman of the Town of Ridgefield reserves the right to accept or reject any or all options, bids or proposals; to waive any technicality in any bid or part thereof, and to accept any bid deemed to be in the best interest of the Town of Ridgefield, Connecticut.
4. Bidders may be present at the opening of bids.
5. Bids may be held by the Town of Ridgefield for a period not to exceed sixty (60) days from the opening of bids for the purpose of reviewing the bids and investigating the qualifications of bidders prior to the awarding of the contract.
6. Insurance requirements, if any, must be submitted with the bid. This includes any Hold Harmless requirements as well as Certificates of Insurance, if required, for the full amounts specified. **Unauthorized changes** to these forms, i.e. adding, striking out and/or changing any words, language or limits **may cause the bidder to be disqualified.**

Please Note : Certificates of Insurance, if required, **MUST** name the Town of Ridgefield as “**Additional Insured**”. Failure to do so may mean disqualification from the Bid.

HOLD HARMLESS AGREEMENT

The undersigned covenants and agrees to and shall at all times indemnify, protect and save harmless the Town of Ridgefield from and against all costs or expenses resulting from any and all losses, damages, detriments, claims, demands, cost and charges including attorneys fees the Town of Ridgefield may directly or indirectly suffer, sustain or be subjected to by reason or on account of the work to be performed pursuant to this Contract or any activities in connection with said Contract whether such losses and damages be suffered or sustained by the Town of Ridgefield directly or by its employees, licenses or invitees or be suffered or sustained by other persons or corporations who may seek to hold the Town of Ridgefield liable therefore.

The Contractor shall comply with the Provisions of the Immigration Reform and Control Act of 1986 effective and enforceable as of June 6, 1987 which Act makes unlawful the hiring for employment or subcontracting individuals failing to provide documentation of legal eligibility to work in the United States. The Contractor shall hold the Town of Ridgefield harmless for the failure of the Contractor to comply with the provisions of said Act.

IN WITNESS WHEREOF, the parties hereto have set their hand and seal this on the _____ day of _____

Signed, Sealed and Delivered in the
Presence of:

Signed:

Notary Public

Purchasing Department, Town of Ridgefield, 400 Main Street, Ridgefield, CT 06877
203-431-2720 & purchasing@ridgefieldct.org

APPENDIX - INSURANCE REQUIREMENTS

Each bidder shall carry and maintain the following insurance coverage during the period of the contract: The Certificate of Insurance for the Limits of Liability stated below should be submitted with your bid to the Purchasing Department at Town Hall. **Bidders may not perform any work until all insurance requirements are met.**

1. **Comprehensive General Liability Insurance** as will protect him, the Town, and any subcontractor performing work covered by this Contract, from claims for damages for personal injury, including accidental or wrongful death, as well as claims for property damages, which may arise from operations under this Contract whether such operations be by himself or by any subcontractor or by anyone directly or indirectly employed by either of them. Liability insurance shall include premises and operations, products, contractual, owners, and contractors protective. The minimum amounts of such insurance shall be as follows:
 - Bodily Injury Liability and Property Damage Liability:
\$1,000,000 each occurrence.
 - **The Town shall be named as an Additional Insured**
This **MUST** be stated explicitly on the Certificate or you will be **disqualified**
2. **Worker's Compensation Insurance and Employer's Liability** for all of his employees, employed at the site and in case any work is sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all employees of the later unless such employees are covered by the protection afforded by the Contractor.
 - Worker's Compensation and Employer Liability:
Statutory Limits
3. **Comprehensive Auto Liability Insurance:**
 - **Bodily Injury Insurance and Property Damage Insurance** covering the operation of all Motor Vehicles owned, hired and/or non-owned by the Contractor, or used by the Contractor in the Prosecution of the work under the Contract, shall be in the minimum of **\$1,000,000 each occurrence.**

All policies relating to this Contract shall be so written so that the Town shall be notified of cancellation or change at least thirty (30) days prior to the effective date for each policy and type of coverage except for nonpayment which shall be ten (10) days prior to the cancellation. Renewal certificate covering the renewal of all policies expiring during the life of the Contract shall be filed with the Town not less than ten (10) days before the expiration of such policies. Failure to do so will result in work stoppage and possible contract cancellation.

Ridgefield Fire Department

Engine Tanker Specifications

ADDITIONAL INSTRUCTIONS TO BIDDERS

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

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

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

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

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

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

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

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

DELIVERY

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

INTENT OF SPECIFICATIONS

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

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

Ridgefield Fire Department

Engine Tanker Specifications

All equipment and components shall be in compliance with the National Fire Protection Association Pamphlet 1901 (2016 Edition), Standard for Automotive Fire Apparatus, for Pumper Fire Apparatus Equipped with a Fire Pump. In addition, the apparatus shall also comply with all federal, state, ICC, and DOT regulations, standards, and laws relating to commercial vehicles as well as to the fire apparatus.

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

LIABILITY

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

COMMERCIAL GENERAL LIABILITY INSURANCE

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

GENERAL REQUIREMENTS

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

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

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

The Maximum length of the vehicle shall not exceed thirty-three feet six inches.

The wheel base shall not exceed two hundred ten inches.

The maximum height for the vehicle shall be nine foot seven inches unladen.

The water tank shall hold a minimum of 2,500 gallons.

EXCEPTIONS, VARIATIONS, OR CLARIFICATIONS

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

Ridgefield Fire Department

Engine Tanker Specifications

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

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

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

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

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

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

CONSTRUCTION

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

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

Ridgefield Fire Department

Engine Tanker Specifications

BID BOND

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

DATA REQUIRED OF THE CONTRACTOR - NFPA 4.20

NFPA 4.20.1 Fire Apparatus Documentation

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

(1) The manufacturer's record of apparatus construction details, including the following information:

- a. Owners name and address
- b. Apparatus manufacturer, model and serial number
- c. Chassis make, model and serial number
- d. GAWR of front and rear axles and GVWR
- e. Front tire size and total rated capacity in pounds
- f. Rear tire size and total rated capacity in pounds
- g. Chassis weight distribution in pounds with water and manufacturer mounted equipment front and rear
- h. Engine make, model, serial number, rated horsepower and related speed and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio
- i. Type of fuel and fuel tank capacity
- j. Electrical system voltage and alternator output in amps
- k. Battery make, model, and capacity in cold crank amps (CCA)
- l. Transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio.
- m. Ratios of all driving axles.
- n. Maximum governed road speed
- o. Pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
- p. Pump transmission make, model, serial number and gear ratio
- q. Auxiliary pump make, model, rated capacity in gallons per minute, (liters per minute where applicable) and serial number
- r. Water tank certified capacity in gallons or liters
- s. Aerial device type, rated vertical height in feet (meters), rated horizontal reach in feet (meters), and rated capacity in pounds (kilograms)
- t. Paint manufacturer and paint number(s)
- u. Company name and signature of responsible company representative

Ridgefield Fire Department

Engine Tanker Specifications

- v. 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
- (15) If the apparatus has an aerial device, the certification of inspection and test for the aerial device
- (16) If the apparatus has an aerial device, all the technical information required for inspection to comply with NFPA 1911
- (17) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy and the final installer's certification the foam proportioning system meets this standard
- (18) If the apparatus has a CAFS, the documentation of the manufacturer's pre-delivery tests
- (19) If the apparatus has a line voltage power source, the certification of the test for the power source
- (20) If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification, and the results of the testing of the air system installation
- (21) Any other required manufacturer test data or reports

OPERATION AND SERVICE DOCUMENTS - NFPA 4.20.2

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

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

Ridgefield Fire Department

Engine Tanker Specifications

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
- (20) One (1) copy of the latest addition of FAMA's Fire Apparatus Safety Guide

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.

Ridgefield Fire Department

Engine Tanker Specifications

HIGHWAY PERFORMANCE NFPA 4.15

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

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

NFPA 4.15.2 - The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (109 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower

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

NFPA TAG REQUIREMENTS

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

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

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

One "Final Stage Label" shall be attached to the driver's side door jam. The label shall certify that the complete vehicle conforms to the federal motor vehicle safety standards, which have been previously fully certified by the incomplete vehicle manufacture or by the intermediate vehicle manufacture and have not been affected by the final stage manufacture.

An accident prevention 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.

Ridgefield Fire Department

Engine Tanker Specifications

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

WARRANTY

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

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

Each new motorized Fire and Rescue Apparatus is to be free from defects in material and workmanship, under normal use and service, for a period of (2) two years. Our obligation under this warranty is limited to replacing or repairing, as the manufacturer may elect, any part or parts thereof, which upon examination would be determined to be defective. Such defective part or parts will be replaced free of charge and without charge for installation to the original purchaser. All warranty work related to the apparatus (not including vehicle chassis) is to be performed at the manufacturer's factory or at an authorized service center.

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

BODY WARRANTY

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

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

- A - Hosebed side walls
- B - Compartments and compartment supports
- C - Compartment doors "except rollup doors when specified"
- D - Complete subframe including pump house framing

WATER TANK WARRANTY

Ridgefield Fire Department

Engine Tanker Specifications

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

PUMP WARRANTY

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

PUMP PLUMBING WARRANTY

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

12 VOLT ELECTRICAL WARRANTY

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

Items specifically covered are:

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

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

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

PAINT WARRANTY

Ridgefield Fire Department

Engine Tanker Specifications

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:

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

CHASSIS WARRANTY

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

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

THIS WILL NOT APPLY

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

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

SINGLE SOURCE WARRANTY COORDINATION

Ridgefield Fire Department

Engine Tanker Specifications

In order to protect the purchaser from divided warranty responsibility between chassis and body manufacturers, the successful bidder will coordinate the warranty for the specified vehicle from bumper to bumper. While all fire apparatus have individual component warranties, we will act as the sole source warranty coordinator on the entire vehicle. This shall include the cab shell, chassis assembly, and complete body structure.

DELIVERY& DEMONSTRATION

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

A qualified delivery engineer will deliver the apparatus and train the fire department to demonstrate the apparatus and provide initial instruction to representatives of the fire department regarding the operation, care, and maintenance of the apparatus and equipment supplied. Four (4) day's training shall be required, one day for each on-duty shift.

PRE-CONSTRUCTION CONFERENCES AND INSPECTION TRIPS

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

There shall be at least to (2) Pre-Construction Conferences, to be held at a mutually agreeable place:

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

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

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

OVERALL APPARATUS DIMENSIONS AND REQUIREMENTS

Unladen maximum height of the apparatus shall not exceed 116 inches - No Exceptions

Ridgefield Fire Department

Engine Tanker Specifications

CHASSIS SPECIFICATION

MODEL

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

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2019 model year.

COUNTRY OF SERVICE

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

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

CAB AND CHASSIS LABELING LANGUAGE

The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English.

APPARATUS TYPE

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

VEHICLE TYPE

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

VEHICLE ANGLE OF APPROACH PACKAGE

Ridgefield Fire Department

Engine Tanker Specifications

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

NFPA1901 Angle of Approach definition:

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

AXLE CONFIGURATION

The chassis shall feature a 6 x 4 axle configuration consisting of a tandem rear drive axle set with a single front steer axle.

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 23,000 pounds.

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

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be 44,000 pounds.

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

PUMP PROVISION

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

WATER & FOAM TANK CAPACITY

Ridgefield Fire Department

Engine Tanker Specifications

The chassis shall include a carrying capacity of 2201 gallons (8331 liters) to 3000 gallons (11,356 liters). The water and/or foam tank(s) shall be supplied and installed by the apparatus manufacturer.

CAB STYLE

The cab shall be a custom, fully enclosed, MFD model with a 5.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to eight (8) seating positions.

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

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

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

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

The exterior width of the cab shall be 99.40 inches wide with a minimum interior width of 91.00 inches. The overall cab length shall be 131.10 inches with 54.00 inches from the centerline of the front of the axle to the back of the cab.

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

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The cab shall offer an interior height of 57.50 inches from the front floor to the headliner in the non-raised roof area and a rear floor to headliner height of 60.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 49.88 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

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

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

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

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

OCCUPANT PROTECTION

The vehicle shall include the Advanced Protection System™ (APS) which shall secure belted occupants and increase the survivable space within the cab. The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

The system components shall include:

- Driver steering wheel airbag
- Driver dual knee air bags (patent pending) with energy management mounting (patent pending) and officer knee airbag.

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Engine Tanker Specifications

- Large driver, officer, and crew area side curtain airbags
- APS advanced seat belt system - retractor pre-tensioners tighten the seat belts around the occupants, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries
- Heavy truck Restraints Control Module (RCM) - receives inputs from the outboard sensors, selectively deploys APS systems, and records sensory inputs immediately before and during a detected qualifying event
- Integrated outboard crash sensors mounted at the perimeter of the vehicle - detects a qualifying front or side impact event and monitors and communicates vehicle status and real time diagnostics of all critical subsystems to the RCM
- Fault-indicating Supplemental Restraint System (SRS) light on the driver's instrument panel

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

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

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

CAB FRONT FASCIA

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

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

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Engine Tanker Specifications

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

FRONT GRILLE

The front cab fascia shall include a classic box style, 304 stainless steel front grille. The grille shall measure 55.45 wide X 33.50 inches high X 1.50 inches deep. The upper portion of the grille shall be hinged to provide service access behind the 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 followed by sealing the seams with SEM brand seam sealer.

The cab shall then be painted the specific color designated by the customer with an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene. The paint shall have a minimum

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Engine Tanker Specifications

thickness of 2.00 mils, followed by a clear top coat not to exceed 2.00 mils. The entire cab shall then be baked at 180 degrees for one (1) hour to speed the curing process of the coatings.

CAB PAINT MANUFACTURER

The cab shall be painted with PPG Industries paint.

CAB PAINT PRIMARY/LOWER COLOR

The lower paint color shall be PPG FBCH 71663 Red.

CAB PAINT SECONDARY/UPPER COLOR

The secondary/upper paint color shall be PPG FBCH 2185 white.

CAB PAINT EXTERIOR BREAKLINE

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

CAB PAINT PINSTRIPE

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

CAB PAINT INTERIOR

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

CAB ENTRY DOORS

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

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

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

CAB ENTRY DOOR TYPE

All cab entry doors shall be barrier clear design resulting in exposed lower cab steps. The doors shall provide approximately 32.00 inches of clearance from the ground to the bottom of the door so cab doors may be opened un-hindered by most obstacles encountered, such as guard rails along interstate highways.

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

CAB INSULATION

The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

CAB 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

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

APPARATUS WIRING PROVISION

An apparatus wiring panel shall be installed in the center dash area behind the rocker switch panel which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 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.

MULTIPLEX DISPLAY

The multiplex electrical system shall include two (2) Weldon Vista IV Touchscreen displays which shall be located one (1) on the left side dash in the switch panel and one (1) on the right side of the dash in the switch panel. The Touchscreen displays shall feature full color LCD display screens. The display shall include a message bar displaying the time of day, and important messages requiring acknowledgement by the user. There shall be virtual controls for the on-board diagnostics. The display screens shall be video ready for back- up cameras, thermal cameras, and DVD. A DIN type input connector ready for GPS interfacing shall be incorporated into the back of the display.

The Touchscreen displays shall measure approximately 6.25 inches wide x 3.38 inches in height. The displays shall offer varying fonts and background colors. The display shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.

LOAD MANAGEMENT SYSTEM

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

DATA RECORDING SYSTEM

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

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Engine Tanker Specifications

- 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.

ACCESSORY POWER

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load. One (1) power stud shall be capable of carrying up to a 15 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud. A 225 amp battery direct power and ground stud shall be provided and installed on the chassis near the left hand battery box for OEM body connections.

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 X15 engine. The X15 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 565 horse power at 1800 RPM and shall be governed at 2100 RPM. The torque rating shall feature 1850 foot pounds of torque at 1150 RPM with 912 cubic inches (14.9 liter) of displacement.

The X15 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.

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Engine Tanker Specifications

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

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

CAB ENGINE TUNNEL

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade 0.19 of an inch thick aluminum alloy plate. The tunnel shall be a maximum of 46.50 inches wide X 29.00 inches high.

DIESEL PARTICULATE FILTER CONTROLS

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

ENGINE PROGRAMMING HIGH IDLE SPEED

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

ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output. This device shall operate only when the 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 be available to manually or automatically re-engage when the brake is released, or when the transmission is placed in neutral. There shall be an indicator on the Vista display and control screen for the high idle speed control.

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

AUXILIARY ENGINE BRAKE

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Engine Tanker Specifications

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.
- There is no active ABS event.

The compression brake shall be controlled through an off/low/high rocker switch on the dash.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

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

FLUID FILLS

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

ENGINE DRAIN PLUG

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

ENGINE WARRANTY

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Engine Tanker Specifications

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

REMOTE THROTTLE CONTROL

A Fire Research Pump Boss 400 governor with dual pressure sensors shall be provided for the electronic engine. It shall include a remote mountable control head.

The Pump Boss 400 shall regulate the pump pressure and monitor all essential engine parameters.

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

ENGINE PROGRAMMING REMOTE THROTTLE

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

ENGINE PROGRAMMING IDLE SPEED

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

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive. The clutch fan shall automatically engage in pump mode.

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.

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

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system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

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

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

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

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and rearward oriented sight glass to monitor the level of the coolant. The surge tank shall have a dual seal cap that meets the engine manufacturer's pressure requirements, and allows for expansion and recovery of coolant into a separate integral expansion chamber.

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

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

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

ENGINE COOLING SYSTEM PROTECTION

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

ENGINE COOLANT

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved

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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 behind the right hand side headlamp. This filter ember separator shall be designed to protect the downstream air filter from embers, using a combination of unique flat and crimped metal screens packaged in a corrosion resistant heavy duty galvanized steel frame. This multilayered screen shall be design traps embers and allows them to burn out before passing through the pack.

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The engine air intake system shall also include a stainless steel air cleaner mounted to the frame and located beneath the cab on the right side of the vehicle. The air cleaner shall utilize a replaceable filter element designed to prevent dust and debris from being ingested into the engine. The air cleaner housing and connections in the air intake system shall be designed to mitigate water intrusion into the system during severe weather conditions.

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

AIR INTAKE PROTECTION

A light duty skid plate shall be supplied for the engine air intake system below the right front side of the cab. The skid plate shall provide protection for the air intake system from light impacts, stones, and road debris. The skid plate shall be painted to match the frame components.

ENGINE EXHAUST SYSTEM

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

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

The single module after treatment through the end of the tailpipe shall be connected with zero leak clamps. The discharge shall terminate horizontally on the right side of the vehicle ahead of the rear tires.

The exhaust system after treatment module shall be mounted below the frame in the outboard position.

DIESEL EXHAUST FLUID TANK

The exhaust system shall include a molded cross linked polyethylene tank for Diesel Exhaust Fluid (DEF). The tank shall have a capacity of six (6) usable gallons and shall be mounted on the left hand side of the chassis frame behind the batteries below the frame.

The DEF tank shall be designed with capacity for expansion in case of fluid freezing. Engine coolant, which shall be thermostatically controlled, shall be run through lines in the tank to help

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prevent the DEF from freezing and to provide a means of thawing the fluid if it should become frozen.

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

ENGINE EXHAUST ACCESSORIES

The exhaust system shall be modified to accept a Plymovent exhaust extraction system collar.

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

The transmission shall include two (2) internal oil filters which shall offer 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	3.51:1
2nd	1.91:1
3rd	1.43:1
4th	1.00:1
5th	0.74:1
6th	0.64:1 (if applicable)
Rev	4.80:1

TRANSMISSION MODE PROGRAMMING

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

TRANSMISSION FEATURE PROGRAMMING

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

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

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

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

TRANSMISSION SHIFT SELECTOR

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

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

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

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

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

TRANSMISSION COOLING SYSTEM

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

TRANSMISSION DRAIN PLUG

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

TRANSMISSION WARRANTY

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

PTO LOCATION

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

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with Spicer 1810 series universal joints for the main drivelines, and 1710 series for the inter-axle shaft. 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

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

MIDSHIP PUMP / GEARBOX MODEL

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

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MIDSHIP PUMP GEARBOX DROP

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

MIDSHIP PUMP RATIO

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

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

The midship pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 110.00 inches.

PUMP SHIFT CONTROLS

One (1) pump shift control panel cutout for Innovative Controls shifter model 3001681 or 3001683 shall be provided on the center dash panel in the lower left-hand corner for customer installation of the pump shift controls.

FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Racor S3238 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve and a see through cover to allow visual inspection of fuel and filter condition. The Racor S3238 shall be a 10 micron filter capable of handling a maximum flow rate of 150 gallons per hour.

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

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

FUEL LINES

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

FUEL SHUTOFF VALVE

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.

ELECTRIC FUEL PRIMER

Ridgefield Fire Department

Engine Tanker Specifications

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

FUEL COOLER

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

FUEL TANK

The fuel tank shall have a capacity of sixty-five (65) gallons and shall measure 35.00 inches in width X 18.50 inches in height X 24.00 inches in length.

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

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

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

FUEL TANK MATERIAL AND FINISH

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

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

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

Ridgefield Fire Department

Engine Tanker Specifications

FUEL TANK STRAP MATERIAL

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

FUEL TANK FILL PORT

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

FUEL TANK SERVICEABILITY PROVISIONS

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

FUEL TANK DRAIN PLUG

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

FRONT AXLE

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 23,000 pounds. This rating shall require special approvals from the wheel manufacturers.

FRONT WHEEL BEARING LUBRICATION

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

FRONT SHOCK ABSORBERS

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

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Engine Tanker Specifications

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

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

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

FRONT SUSPENSION

The front suspension shall include a ten (10) leaf spring pack in which the longest leaf measures 53.38 inch long and 4.00 inches wide. The springs shall be shot peened for long life and include a military double wrapped front eye. The springs shall be bolted in place with M20 10.9 bolts and have replaceable rubber bushings in the spring eyes. The spring capacity shall be rated at 23,000 pounds.

STEERING COLUMN/ WHEEL

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

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

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

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

POWER STEERING PUMP

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

FRONT AXLE CRAMP ANGLE

Ridgefield Fire Department

Engine Tanker Specifications

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

POWER STEERING GEAR

The power steering gear shall be a TRW model TAS 85 with an assist cylinder.

CHASSIS ALIGNMENT

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

REAR AXLE

The rear axle shall be a Meritor model MT-44-14X tandem drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a rated capacity of 44,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.50 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

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

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

REAR AXLE DIFFERENTIAL CONTROL

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Engine Tanker Specifications

The tandem axle chassis shall include an inter-axle differential lock, which will allow both axles to be engaged as drive axles. The differential lock shall be controlled by a locking rocker switch on the switch panel. The light on the switch shall illuminate with positive engagement of the inter-axle differential control.

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

VEHICLE TOP SPEED

The top speed of the vehicle shall be approximately 60 MPH +/-2 MPH at governed engine RPM.

REAR SUSPENSION

The tandem axle rear suspension shall be a Ridewell Dynalastic RD202 with accordion elastomer springs, incorporating a straddle mount pedestal and urethane pivot bushings, preset load distribution and independent axle movement. The rear tandem suspension shall have 54.00 inch axle centers.

The rear tandem suspension capacity shall be rated at 40,000 to 48,000 pounds.

REAR SHOCK ABSORBERS

Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension.

FRONT TIRE

The front tires shall be Goodyear 425/65R-22.5 20PR "L" tubeless radial G296 MSA mixed service tread.

The front tire stamped load capacity shall be 22,800 pounds per axle with a nominal speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum load capacity shall be 24,400 pounds per axle with a speed rating of 68 miles per hour when properly inflated to 120 pounds per square inch.

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Engine Tanker Specifications

The Goodyear Intermittent Service Rating maximum speed capacity shall be 22,800 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

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

REAR TIRE

The rear tires shall be Goodyear 11R-22.5 16PR "H" tubeless radial G622 RSD all-weather tread.

The rear tire stamped load capacity shall be 24,020 pounds per axle with a nominal speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

The Goodyear Intermittent Service Rating maximum load capacity shall be 25,700 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.

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

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

REAR AXLE RATIO

The rear axle ratio shall be 5.29:1.

TIRE PRESSURE INDICATOR

There shall be a PressurePro™ electronic tire pressure indication transmitter at each valve stem on the vehicle that shall transmit a signal to a display mounted on the left side sun visor with a Velcro® hook and loop mount. The display shall monitor if there is sufficient pressure in each specific tire. The monitor shall have two low pressure alert levels, the first at 12.5% and the second at 25% drop in pressure. The monitor shall also have a variable high pressure alert that can be adjusted by the end user, the high pressure alert shall come set to alert at a 24 pounds per square inch increase. The monitor shall have self-tests for signal strength and sensor packet counts.

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Engine Tanker Specifications

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.

WHEEL TRIM

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

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

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

TIRE CHAINS

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.

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.

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Engine Tanker Specifications

AUXILIARY LUBRICATION SYSTEM

A Lincoln automatic lubrication system shall be installed on the chassis. The system shall be capable of lubricating eighteen (18) grease points on the chassis. A park brake interlock shall be incorporated into the ignition system to keep the system from operating while parked. The system shall be mounted on the left hand frame rail.

BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include a three (3) air tank, four (4) reservoir system with a total of 6220 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss. All air reservoirs provided on the chassis shall be labeled for identification.

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

A six (6) sensor, six (6) modulator Anti-lock Braking System (ABS) shall be installed on the front and tandem 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 tandem 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 virtual style switch shall be provided and properly labeled “mud/snow”. When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

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Engine Tanker Specifications

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

FRONT BRAKES

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

REAR BRAKES

The rear brakes shall be Meritor 16.50 inch X 8.63 inch S-cam drum type.

PARK BRAKE

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

PARK BRAKE CONTROL

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

The parking brake actuation valve shall be mounted on the top surface of the center dash within easy access of the driver and the officer positions. A guard shall be installed over the parking brake control to prevent accidental application or release.

REAR BRAKE SLACK ADJUSTERS

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

AIR DRYER

The brake system shall include a Wabco System Saver 1200 air dryer with an integral heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that

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Engine Tanker Specifications

closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be mounted behind the battery box on the left hand side.

FRONT BRAKE CHAMBERS

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

REAR BRAKE CHAMBERS

The rear axle shall include Haldex Gold Seal 30/36 brake chambers which shall convert the energy of compressed air into mechanical force and motion. The Gold Seal brake chamber shall feature a zinc plated spring chamber which shall be permanently attached for safety. This shall actuate the brake camshaft via a fully threaded push rod, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The Haldex Gold Seal brake chamber shall feature an orange alert stroke indicator, a piloting diaphragm, a piloting dust shield and an epoxy powder coated spring and housing.

AIR COMPRESSOR

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

AIR GOVERNOR

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

MOISTURE EJECTORS

Heated, automatic moisture ejectors with a manual drain provision shall be installed on all reservoirs of the air supply system.

AIR SUPPLY LINES

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Engine Tanker Specifications

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.

AIR INLET CONNECTION

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

AIR INLET/ AUTO EJECT CONNECTION COVER

The air auto eject connection shall be yellow in color.

AIR INLET LOCATION

The air inlet shall be installed on the left hand side of the cab above the wheel well in the forward position.

AIR INLET/ OUTLET FITTING TYPE

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

REAR AIR TANK MOUNTING

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

WHEELBASE

The chassis wheelbase shall be 222.00 inches.

REAR OVERHANG

The chassis rear overhang shall be 100.00 inches.

FRAME

Ridgefield Fire Department

Engine Tanker Specifications

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

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

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

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

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

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

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

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

FRAME WARRANTY

Summary of Warranty Terms:

THE FOLLOWING IS SUMMARY OF WARRANTY TERMS FOR INFORMATION ONLY. THE ACTUAL LIMITED WARRANTY DOCUMENT, WHICH IS ATTACHED TO THIS OPTION, CONTAINS THE COMPLETE STATEMENT OF THE SPARTAN MOTORS USA LIMITED WARRANTY. SPARTAN'S RESPONSIBILITY IS TO BE ACCORDING TO THE TERMS OF THE COMPLETE LIMITED WARRANTY DOCUMENT.

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Engine Tanker Specifications

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty period shall commence on the date the vehicle is delivered to the first end user.

FRAME PAINT

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

- Main frame “C” channel or channels
- Front splayed rails and fish plates
- Cross members (excluding suspension cross members)
- Cross member gussets
- Fuel tank mounting brackets
- Fuel tank straps (unless material/finish is specified in 3130 subcat)
- Air tank mounting brackets
- Exhaust mounting brackets
- Air cleaner skid plate
- Radiator skid plate
- Battery supports, battery trays and battery covers

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

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

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

- Suspension components
- Front and rear axles

All powder coatings, primers and paint used on the non-galvanized components shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-cured 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.

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The chassis under carriage components which are not galvanized shall be painted the primary/lower cab color. Paint shall be applied prior to airline and electrical wiring installation.

FRONT BUMPER

The chassis shall be equipped with a severe duty front bumper constructed from structural steel channel. The bumper material shall be 0.38 thick ASTM A36 steel which shall measure 12.00 inches high with a 3.05 inch flange and shall be 104.50 inches wide with angled front corners.

The bumper shall be primed and painted as specified.

FRONT BUMPER EXTENSION LENGTH

The front bumper shall be extended approximately 6.00 inches ahead of the cab.

FRONT BUMPER PAINT

The front bumper shall be painted the same as the lower cab color.

FRONT BUMPER APRON

The 6.00 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.

MECHANICAL SIREN

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

MECHANICAL SIREN LOCATION

The siren shall be recess mounted in the center on the front fascia of the bumper between the frame rails.

AIR HORN

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Engine Tanker Specifications

The chassis shall include two (2) Grover brand Stutter Tone air horns, one (1) shall measure 21.00 inches long and one (1) shall measure 24.00 inches long, both with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish.

AIR HORN LOCATION

The air horns shall be recess mounted in the front bumper 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

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

ELECTRONIC SIREN SPEAKER LOCATION

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

FRONT BUMPER TOW HOOKS

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

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.

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Engine Tanker Specifications

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

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

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

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

CAB TILT LIMIT SWITCH

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

CAB TILT CONTROL RECEPTACLE

A six (6) pin Deutsch receptacle that includes a cap shall be installed in the front bumper tail on the right hand side to provide a place to plug in the cab tilt remote control pendant.

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

CAB TILT LOCK DOWN INDICATOR

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

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

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Engine Tanker Specifications

CAB WINDSHIELD

The cab windshield shall have a surface area of 2969.88 square inches and be of a two (2) piece wraparound design for maximum visibility.

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

Each windshield shall be installed using black self locking window rubber.

GLASS FRONT DOOR

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished using electric actuation. The left and right front door windows shall be controlled using a switch on each respective side inner door panel. The driver's door shall include a switch for each powered door window in the cab. There shall be a master power switch at the driver's door to cut off power to the other cab windows.

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

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

GLASS TINT FRONT DOOR

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

GLASS REAR DOOR RH

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

GLASS TINT REAR DOOR RIGHT HAND

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

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GLASS REAR DOOR LH

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

GLASS TINT REAR DOOR LEFT HAND

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

GLASS SIDE MID RH

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

GLASS TINT SIDE MID RIGHT HAND

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

GLASS SIDE MID LH

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

GLASS TINT SIDE MID LEFT HAND

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

CLIMATE CONTROL

The cab shall include a 57,500 BTU @ 425 CFM front overhead heater/defroster which shall be provided and installed above the windshield between the sun visors.

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The cab shall also include a combination heater air-conditioning unit mounted on the engine tunnel. This unit shall offer eight (8) adjustable louvers, four (4) forward facing and four (4) rearward facing, a temperature control valve and two (2) blowers offering three (3) speeds which shall be capable of circulating 550 cubic feet of air per minute. The unit shall be rated for 42,500 BTU/Hr of cooling and 36,000 BTU/Hr of heating.

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 bend zinc coated steel fittings and Aeroquip flexible hose with Aeroquip 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 and defrosting controls shall be located on the front overhead climate control unit. There shall be additional heating and air conditioning controls located on the engine tunnel mounted climate control unit.

A/C CONDENSER LOCATION

A roof mount style A/C condenser shall be temporarily installed behind the cab on a steel structure above the frame. The A/C condenser shall include fourteen (14) feet of additional length hoses and wiring for the OEM to relocate the condenser onto the top of the body.

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.

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.

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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 MAT

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.

The floor shall have an overlay of 5052-H32 aluminum plate which shall feature a Spar-Liner spray on bedliner coating. The aluminum plate shall be held down with screws and aluminum trim moldings. The step well area aluminum trim molding shall feature a Mebac[®] grit surface finish. 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.

Proposals offering any step well trim molding other than with the Mebac[®] brand surface shall not be considered.

INTERIOR TRIM

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

REAR WALL INTERIOR TRIM

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

HEADER TRIM

The cab interior shall feature header trim above the driver and officer positions constructed of vacuum formed ABS material.

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TRIM CENTER DASH

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

TRIM LH DASH

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

TRIM RH DASH

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

ENGINE TUNNEL TRIM

The cab engine tunnel shall be covered with a multi-layer mat consisting of 0.25 inch 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.

The cab engine tunnel shall have an overlay of 5052-H32 aluminum plate which shall feature a Spar-Liner spray on bedliner coating, colored to match the cab paint interior finish color scheme. The aluminum plate shall be held down with screws. 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.

POWER POINT DASH MOUNT

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

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

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output and one (1) USB port capable of a 5 Volt-2.1 amp output. The receptacles shall be wired battery direct and include a backlit legend.

AUXILIARY POWER POINT ENGINE TUNNEL

The cab interior shall include one (1) 12 volt cigarette lighter type receptacle 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 5032 H32 aluminum Grip Strut® 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. The middle step shall be integral with the cab construction and shall be trimmed with a Flex-Tred® adhesive grit surface material.

UNDER CAB ACCESS DOOR

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

INTERIOR DOOR TRIM

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

DOOR TRIM CUSTOMER NAMEPLATE

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.

CAB DOOR TRIM REFLECTIVE

The interior of each door shall include a white reflective tape installed vertically along the outer rear edge of the door. Also a 12.00 inch reflective octagon stop sign shall be installed on the inner door panel of each door. The lowest portion of each door skin shall include a reflective tape

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chevron with red and yellow stripes and a Spartan logo. The chevron tape shall measure 6.00 inches in height.

INTERIOR GRAB HANDLE "A" PILLAR

A rubber covered 11.00 inch grab handle shall be provided on the inside of the cab on the hinge post at the driver and officer doors. The handle shall assist personnel in exiting and entering the cab. The handle shall be yellow in color.

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 yellow powder coat finish to assist personnel entering and exiting the cab.

INTERIOR GRAB HANDLE REAR DOOR

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

INTERIOR SOFT TRIM COLOR

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

INTERIOR TRIM SUNVISOR

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

INTERIOR 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 in color.

CAB PAINT INTERIOR

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

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TRIM CENTER DASH INTERIOR PAINT

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

TRIM LEFT HAND DASH INTERIOR PAINT

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

TRIM RIGHT HAND DASH INTERIOR PAINT

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

FLOOR INTERIOR PAINT

The metal surfaces on the floor of the cab shall feature a medium gray Spar-Liner spray on bedliner coating.

DASH PANEL GROUP

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

SWITCHES CENTER PANEL

The center dash panel shall include three (3) rocker switch positions in the panel.

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

SWITCHES LEFT PANEL

The left dash panel shall include four (4) switches. There shall be three (3) across the top of the panel with one (1) below. Two (2) of the top row of switches shall be rocker type and the left one (1) shall be the windshield wiper/washer control switch. The lower switch shall be a rocker type switch.

A rocker switch with a blank legend installed directly above shall be provided for any position not designated by a specific option. The non-designated switches shall be two-position, black

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switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have backlighting provided.

SWITCHES RIGHT PANEL

The right dash panel shall include one (1) rocker switch.

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

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument 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 Bostrom Firefighter seats shall include a covering of extra high strength, wear resistant fabric made of durable Durawear Plus™ ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Durawear Plus™ meets or exceeds specification of the common trade name Imperial 1800. The material meets FMVSS 302 flammability requirements.

SEAT COLOR

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

SEAT BACK LOGO

The seat back shall include the “4-Guys” logo. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

SEAT DRIVER

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

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

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

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

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

SEAT BACK DRIVER

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

SEAT MOUNTING DRIVER

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

OCCUPANT PROTECTION DRIVER

The driver's position shall be equipped with the Advanced Protection System™ (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

The driver's seating area APS shall include:

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- Advanced seat belt system - retractor pre-tensioner tightens the seat belt around the driver, securing the occupant in the seat and the load limiter plays out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.
- Large side curtain airbag - protects the driver's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to the driver in a qualifying event by covering the window and the upper portion of the door.
- Dual knee airbags (patent pending) with energy management mounting (patent pending) - protects the driver's lower body from dangerous surface contact injuries, acceleration injuries, and from intrusion as well as locks the lower body in place so the upper body shall be slowed by the load limiting seat belt.

Steering wheel airbag - protects the driver's head, neck, and upper torso from contact injuries, acceleration injuries, and contact points with intrusive surfaces as a result of a collision.

SEAT OFFICER

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

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

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

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

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

SEAT BACK OFFICER

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

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

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

SEAT MOUNTING OFFICER

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

OCCUPANT PROTECTION OFFICER

The officer's position shall be equipped with the Advanced Protection System™ (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

The officer's seating area APS shall include:

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

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Knee airbags - protects the officer's lower body from dangerous surface contact injuries, acceleration injuries, and from contact points with intrusive surfaces as a result of a collision as well as locks the lower body in place so the upper body shall be slowed by the load limiting seat belt.

POWER SEAT WIRING

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

SEAT BELT ORIENTATION CREW

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

SEAT FORWARD FACING OUTER LOCATION

The crew area shall include two (2) forward facing outboard seats, which include one (1) located next to the outer wall of the cab on the left side of the cab and one (1) located next to the outer wall on the right side of the cab.

SEAT CREW FORWARD FACING OUTER

The crew area shall include a seat in the forward facing outer position which shall be a theatre style series. The seat shall feature a padded seat cushion which shall be hinged and attached to the wall providing optimum space savings. The seat shall remain in the stored position until occupied.

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

The buckle portion of the seat belt shall be mounted on a rigid or semi-rigid stalk such that the buckle remains positioned in an accessible location. The seat belt assembly anchorages shall conform to the Federal Safety Standard (FMVSS) No. 210, "Seat belt assembly anchorages".

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

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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 OUTER

The crew area shall include a seat in the forward facing outer position which shall be a theatre style seat. The rear wall padded trim shall act as the backrest for each seat.

There shall be a red, three-point shoulder harness with lap belt and an automatic retractor attached to the cab and available to the seat. The buckle portion of the seat belt shall be mounted on a rigid or semi-rigid stalk such that the buckle remains positioned in an accessible location. The seat belt assembly anchorages shall conform to the Federal Safety Standard (FMVSS) No. 210, "Seat belt assembly anchorages".

SEAT MOUNTING FORWARD FACING OUTER

The forward facing outer seat shall be mounted in the furthest outboard position facing the front of the cab.

OCCUPANT PROTECTION FFO

The forward facing outer seat position(s) shall be equipped with the Advanced Protection System™ (APS). The APS shall selectively deploy integrated systems to protect against injuries in qualifying frontal impact, side impact, and rollover events. The increase in survivable space and security of the APS shall also provide ejection mitigation protection.

Each forward facing outer seating position APS shall include:

- APS advanced seatbelt system - retractor pre-tensioners tighten the seat belts around each occupant, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

Side curtain airbag - protects each occupant's head, neck, and upper body from dangerous cab side surfaces and contact points with intrusive surfaces as a result of a collision as well as provides ejection mitigation protection to each occupant in a qualifying event by covering the windows and walls adjacent to each seating position with an airbag custom designed for each cab configuration.

SEAT FORWARD FACING CENTER LOCATION

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

SEAT CREW FORWARD FACING CENTER

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

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

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

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

SEAT BACK FORWARD FACING CENTER

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

The hands-free holder shall consist of a back plate, bottom cradle, non-marring top claws, and claw height adjustment knob. The height adjustment knob shall allow for easy adjustment of the

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claws to the SCBA. The hands-free holder's claws shall lock from inertial forces to prevent the SCBA from becoming a projectile in the event of a crash to meet the NFPA 1901-03 standard for SCBA retention. The SCBA holder shall offer single-motion insertion into the claws and hands-free release when the SCBA fitted seat occupant rises.

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

OCCUPANT PROTECTION FFC

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

Each forward facing center seating position APS shall include:

- APS advanced seatbelt system - retractor pre-tensioners tighten the seat belts around each occupant, securing the occupants in seats and load limiters play out some of the seat belt webbing to reduce seat belt to chest and torso force upon impact as well as mitigate head and neck injuries.

Side curtain airbag - provides ejection mitigation protection to each occupant in a qualifying event by covering the windows and walls adjacent to crew seating with an airbag custom designed for each cab configuration.

SEAT FRAME FORWARD FACING

The forward facing center seating positions shall include an enclosed seat frame located and installed on the rear wall. The seat frame shall measure 42.38 inches wide X 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

SEAT FRAME FORWARD FACING STORAGE ACCESS

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

SEAT MOUNTING FORWARD FACING CENTER

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

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CAB FRONT UNDERSEAT STORAGE ACCESS

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

SEAT COMPARTMENT DOOR FINISH

All underseat storage compartment access doors shall feature a medium gray Spar-Liner spray on bedliner coating.

HELMET STORAGE SHIPLOOSE QUANTITY

The ship loose items shall include four (4) helmet storage brackets.

HELMET STORAGE SHIPLOOSE

The ship loose items shall include Ziamatic model UHH-1 helmet storage designed to meet current NFPA regulations. The UHH-1 shall securely fasten fire helmets to flat cab surfaces. The UHH-1 utilizes a helmet hook and an adjustable strap to accommodate nearly any helmet size or configuration.

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; each shall be affixed to a radial arm. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

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

CAB DOOR HARDWARE

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish.

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

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

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

DOOR LOCKS

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

GRAB HANDLES

The cab shall include one (1) 18.00 inch three-piece knurled aluminum, anti-slip exterior assist handle, installed behind each cab entry door. The grab handle shall be made of extruded aluminum with a knurled finish to enable non-slip assistance with a gloved hand. Each grab handle shall include a stainless steel scuff plate to help protect the cab paint from damage.

REARVIEW MIRRORS

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

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

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

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

REARVIEW MIRROR HEAT SWITCH

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

CAB FENDER

Ridgefield Fire Department

Engine Tanker Specifications

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 SAE 304 polished stainless steel.

CAB EXTERIOR FRONT & SIDE EMBLEMS

The cab shall include three (3) Spartan emblems. There shall be one (1) installed on the front air intake grille and one (1) emblem on each of the cab sides. The cab shall also include one (1) Advanced Protection System shield emblem on each front door.

IGNITION

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

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

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

BATTERY

The single start electrical system shall include six (6) Harris BCI 31 925 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.

BATTERY TRAY

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

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

BATTERY BOX COVER

Ridgefield Fire Department

Engine Tanker Specifications

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

BATTERY CABLE

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

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

BATTERY JUMPER STUD

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

ALTERNATOR

The charging system shall include a 270 amp Leece Neville 12 volt alternator. The alternator shall include a self-excited integral regulator.

STARTER MOTOR

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

BATTERY CONDITIONER

A Kussmaul 1200 battery conditioner shall be supplied. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position.

BATTERY CONDITIONER DISPLAY

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted to the dash so it is viewable through the front windshield on the left hand side of the cab.

ELECTRICAL INLET

Ridgefield Fire Department

Engine Tanker Specifications

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

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

Amp Draw Reference List:

Kussmaul 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 in the rearward position.

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.

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.

Ridgefield Fire Department

Engine Tanker Specifications

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 via a virtual button on the Vista display. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights.

GROUND LIGHTS

Each door shall include an NFPA compliant LED ground light mounted to the underside of the cab step below each door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life. The ground lighting shall be activated by the opening of the door on the respective cab side, when the parking brake is set and through a virtual button on the Vista display and control screen.

LOWER CAB STEP LIGHTS

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

INTERMEDIATE STEP LIGHTS

The intermediate step well area at each door shall include an LED light within a chrome housing. The Egress step lights shall provide visibility to the step well area for the first step exiting the vehicle. The Egress step lights shall activate with Entry step lighting.

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.

Ridgefield Fire Department

Engine Tanker Specifications

LIGHTBAR PROVISION

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

CAB FRONT LIGHTBAR

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

LIGHTBAR SWITCH

The light bar shall be controlled by a virtual button on the Vista display and control screen. This button shall be clearly labeled for identification.

FRONT SCENE LIGHTS

The front of the cab shall include a Whelen Pioneer model PFH1 contour roof mount scene light installed on the brow of the cab.

Each 75 watt lamp head shall incorporate a 12 volt DC Super-LED flood light installed in a die-cast aluminum housing. Each lamp head shall use a collimator/metalized redux flood reflector assembly with Proclera™ silicone optics and a clear non-optic polycarbonate lens. The lens/reflector assembly shall utilize a liquid injected molded silicone gasket to be resistant to water, moisture, dust, and other environmental conditions. The PFH1 shall be vibration resistant. The Pioneer PC boards shall be conformal coated for additional protection. Each combination flood light lamp head shall draw 13.0 amps in spotlight mode and generate 8,875 lumens total. Each lamp head shall measure 4.25 inches in height X 8.35 inches in width. The lamp heads and brackets shall be powder coated white.

FRONT SCENE LIGHTS ACTIVATION

The front scene lighting shall be activated by a virtual button on the Vista display and control screen.

FRONT SCENE LIGHT LOCATION

Ridgefield Fire Department

Engine Tanker Specifications

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

SIDE SCENE LIGHTS

The cab shall include two (2) Whelen Pioneer model PCPSM1C LED surface mount lights installed one (1) on each side of the cab.

The PCPSM1C configuration shall consist of twelve (12) white Super-LEDs for the spot light with a specialized spot reflector on the bottom, twenty-four (24) white Super-LEDs in the flood light with a clear optic collimator/metalized reflector assembly on the top, and a clear non-optic polycarbonate lens. Each lamp head shall draw 6.0 amps and generate 7,800 lumens. Each lamp head shall measure 6.37 inches in height X 8.97 inches in width. Each lamp head housing shall be chrome plated.

SIDE SCENE LIGHT LOCATION

The scene lighting located on the left and right sides of the cab shall be mounted in the upper forward portion of the cab between the front and rear crew doors.

SIDE SCENE ACTIVATION

The scene lights shall be activated by two (2) virtual buttons on the Vista display and control screen(s), one (1) for each light.

INTERIOR OVERHEAD LIGHTS

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

An additional incandescent three (3) light module with dual map lights shall be located over the engine tunnel which can be activated by individual switches on the lamp.

MAP LIGHTS

A Roxter gooseneck style map light shall be provided. The light shall have a clear bulb and a control switch on the base. The light shall be located on the right hand side of the dash.

DO NOT MOVE APPARATUS LIGHT

Ridgefield Fire Department

Engine Tanker Specifications

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

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

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

MASTER WARNING SWITCH

A master switch shall be included, as a virtual button on the Vista display and control screen which shall be labeled "E Master" for identification. The button shall feature control over all devices wired through it. Any warning device switches left in the "ON" position when the master switch is activated shall automatically power up.

INBOARD FRONT WARNING LIGHTS

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

INBOARD FRONT WARNING LIGHTS COLOR

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

OUTBOARD FRONT WARNING LIGHTS

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

OUTBOARD FRONT WARNING LIGHTS COLOR

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

FRONT WARNING SWITCH

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

Ridgefield Fire Department

Engine Tanker Specifications

INTERSECTION WARNING LIGHTS

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

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red.

INTERSECTION WARNING LIGHTS LOCATION

The intersection lights shall be mounted on the side of the cab rearward from the front cab corner radius ahead of the cab doors.

SIDE WARNING LIGHTS

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

SIDE WARNING LIGHTS COLOR

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

SIDE WARNING LIGHTS LOCATION

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

SIDE AND INTERSECTION WARNING SWITCH

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

TANK LEVEL LIGHTS

There shall be two (2) Whelen PSTANK water level light strips surface mounted vertically, one (1) on each side of the cab behind the rear cab doors.

The light strips shall feature four (4) colors of LED lights to indicate the fluid level of a tank. The colors from top to bottom shall be green, blue, amber, and red.

Ridgefield Fire Department

Engine Tanker Specifications

INTERIOR DOOR OPEN WARNING LIGHTS

The interior of each door shall include one (1) red Whelen 500 Series TIR6™ Super-LED® warning light located on the door panel. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

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

SIREN CONTROL HEAD

A Whelen 295HFSA7 electronic siren control head with remote dual 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, 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 through the steering wheel button for the driver and by a single right hand side lanyard cable accessible to the officer. 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 two (2) Linemaster model SP491-S81 foot switches mounted in the front section of the cab for use by the driver and officer. 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

Ridgefield Fire Department

Engine Tanker Specifications

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

INSTRUMENTATION

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

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

The instrument panel shall contain the following gauges:

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

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

One (1) four-movement gauge displaying engine oil pressure, coolant temperature, voltmeter, and transmission temperature shall be included. The scale on the engine oil pressure gauge shall read from 0 to 100 pounds PSI with a red line zone indicating critical levels of oil pressure. A red indicator light in the gauge and audible alarm shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (°F) with a red line zone indicating critical coolant temperatures. A red indicator light in the gauge and audible alarm shall indicate high coolant temperature. The scale on the voltmeter shall read from 9 to 18 volts with a red line zone indicating critical levels of battery voltage. A red indicator light in the gauge and an audible alarm shall indicate high or low system voltage. The low voltage alarm shall indicate when the system voltage has dropped below 11.8 volts for more than 120 seconds in accordance with the requirements of NFPA 1901. The scale on the transmission temperature gauge shall read from 100 to 300 degrees °F with a red line zone indicating critical

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Engine Tanker Specifications

temperatures. A red indicator light in the gauge and an audible alarm shall indicate a high transmission temperature.

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

RED INDICATORS

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

AMBER INDICATORS

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

GREEN INDICATORS

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

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Engine Tanker Specifications

Auxiliary Brake - indicates secondary braking device is active

BLUE INDICATORS

High Beam indicator

AUDIBLE ALARMS

Air Filter Restriction

Cab Tilt Lock

Check Engine

Check Transmission

Open Door/Compartment

High Coolant Temperature

High or Low System Voltage

High Transmission Temperature

Low Air Pressure

Low Coolant Level

Low DEF Level

Low Engine Oil Pressure

Low Fuel

Seatbelt Indicator

Stop Engine

Water in Fuel

Extended Left/Right Turn Signal On

ABS System Fault

BACKLIGHTING COLOR

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

AUXILIARY SPEEDOMETER

The dash shall include an auxiliary analog speedometer.

RADIO

A Jensen radio with weather band, AM/FM stereo receiver, compact disc (CD) player, and four (4) speakers shall be installed in the cab. The radio shall include rear RCA input pigtail connector, satellite radio capability, and a covered front auxiliary mini stereo input with iPod ready USB jack. The CD player shall be compatible with CD-R, CD-RW and MP3 format discs. The radio shall be installed in the left hand overhead position. The speakers shall be installed inside the cab with two (2) speakers recessed within the headliner of the front of the cab just behind the windshield and two (2) speakers on the upper rear wall of the cab.

Ridgefield Fire Department

Engine Tanker Specifications

AM/FM ANTENNA

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

CAMERA

An Audiovox Voyager heavy duty rearview camera system shall be supplied. One (1) box shaped camera shall be shipped loose for OEM installation in the body to afford a clear view of the rear of the vehicle and two (2) cameras with a teardrop shaped chrome plated housings shall be mounted on the left and right side of the cab below the windshield ahead of the front door at approximately the same level as the cab door handle. The side cameras shall afford a clear view of the area each side of the vehicle.

The cameras shall be wired to a Weldon Vista display which shall be located on the left side of the dash. The rear camera shall activate when the transmission is placed in reverse and the side cameras shall activate with the respective side turn signal. Each camera shall also be activated by a button on the Vista display.

COMMUNICATION ANTENNA

An antenna base, for use with an NMO type antenna, shall be mounted on the right hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be an Antenex model MABVT8 made for either a 0.38 inch or 0.75 inch receiving hole in the antenna and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design. The antenna base shall be provided by Spartan.

COMMUNICATION ANTENNA CABLE ROUTING

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

AUXILIARY COMMUNICATION ANTENNA

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

Ridgefield Fire Department

Engine Tanker Specifications

AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING

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

ADDITIONAL COMMUNICATION ANTENNA

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

ADDITIONAL COMMUNICATION ANTENNA CABLE ROUTING

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

EXTRA COMMUNICATION ANTENNA

An extra antenna base, for use with a NMO type antenna, shall be installed on the cab. The antenna base shall be an Antenex model MABVT8 and shall include 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base shall be mounted on the forward portion of the raised roof on the right hand side approximately 8.00 inches from the center of the cab so it does not interfere with light bars or other roof mounted equipment installed by Spartan Chassis. The antenna base shall be provided by Spartan.

EXTRA COMMUNICATION ANTENNA CABLE ROUTING

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

CAB EXTERIOR PROTECTION

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

FIRE EXTINGUISHER

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

Ridgefield Fire Department

Engine Tanker Specifications

DOOR KEYS

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

DIAGNOSTIC SOFTWARE OCCUPANT PROTECTION

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

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

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

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

WARRANTY

Summary of Warranty Terms:

THE FOLLOWING IS SUMMARY OF WARRANTY TERMS FOR INFORMATION ONLY. THE ACTUAL LIMITED WARRANTY DOCUMENT, WHICH IS ATTACHED TO THIS OPTION, CONTAINS THE COMPLETE STATEMENT OF THE SPARTAN MOTORS USA LIMITED WARRANTY. SPARTAN'S RESPONSIBILITY IS TO BE ACCORDING TO THE TERMS OF THE COMPLETE LIMITED WARRANTY DOCUMENT.

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

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

Ridgefield Fire Department

Engine Tanker Specifications

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

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

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

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

PAINT CONFIRMATION

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

CHASSIS MODIFICATIONS

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.

FRONT MUDDLAPS

Heavy duty black rubber mud flaps shall be provided behind the front tires.

MUDDLAP - FULL WIDTH

A full width Black Anti-sail rear mud flap shall be provided and installed behind the rear wheels.

CHASSIS MODIFICATIONS - REAR CHROME TOW EYES

Two (2) chrome plated tow eyes shall be attached directly to the chassis frame rails at the rear.

Ridgefield Fire Department

Engine Tanker Specifications

HELMET HOLDERS

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

TIRE CHAIN ADJUSTMENT AND TESTING

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

FUEL FILL

Y___N___

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

CAB TILT CONTROL

Y___N___

There shall be a cab tilt pendant control provided and installed on the right side of the apparatus. The pendant shall be located directly behind the 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.

PUMP CONTROL

Y___N___

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

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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.

Y___N___

PUMP

HALE Qmax XS 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 designed to mount on the chassis rails of commercial or custom truck chassis and have the capacity of 1,000- to 2,250-gallons per minute (U.S. GPM), NFPA-1901 rated performance.
2. The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.
3. The entire pump shall be assembled at the pump manufacturer's factory and hydrostatically tested to 600 PSI. The pump shall be tested at the pump manufacturer's factory to confirm performance spots as outlined by the latest edition of NFPA 1901. The pump shall be free from objectionable pulsation and vibration during testing and operation.
4. The pump body and related parts shall be constructed of fine grain alloy cast iron with a minimum tensile strength of 30,000 PSI (2,069 bar). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.
5. 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.

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6. The pump body shall extend as one piece across the truck chassis from side to side and incorporate discharge manifolding with a minimum of (12) 4" ports and (1) 3" port. Six additional/optional 3" ports are available/optional.
8. The pump shall have one double suction impeller and two opposed discharge volute cutwaters to eliminate radial unbalance, no exceptions.
9. The pump shaft shall be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing shall be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material, no exceptions. The remaining bearings shall be heavy-duty, deep-groove ball bearings in the gearbox and they shall be splash lubricated.
10. The pump shaft shall have only one packing gland located on the inlet side of the pump. It shall be of split design for ease of repacking. The packing gland shall be a full-circle threaded design to exert uniform pressure on packing and to prevent uneven packing loading when tightened, no exceptions. It shall be easily adjusted by hand with rod or screwdriver without special tools or wrenches required. The packing rings shall be made of a permanently lubricated, long-life graphic composition and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion, no exceptions.
11. Pump impeller shall be constructed of hard, fine-grain bronze and accurately machined and balanced. The vanes of the impeller intake eyes shall be designed to provide ample reserve capacity utilizing minimum horsepower.
12. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency, no exceptions.
13. The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished for long shaft life. Pump shaft shall be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

Gearbox

1. Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. of drive through torque of the apparatus engine. The drive unit shall be designed with ample lubrication reserve and to maintain proper operating temperature.
2. The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.

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3. All gears, both drive and pump, shall be made of the highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate design for long life, smooth and quiet running, and high load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust, no exceptions.
4. The pump ratio shall be selected by the apparatus manufacturer to provide maximum performance with the engine and transmission selected.
5. If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.
6. Three green warning lights shall be provided to indicate to the operator when the pump has completed the shift from "road" to "pump" position. Two green lights are to be located in the truck driving compartment and one green light on pump operator's panel adjacent to the throttle control.

Y___N___

HALE ANODE SYSTEM

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

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

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

Y___N___

TRIDENT AUTOMATIC PRIMING PUMP

The priming pump shall be a Trident Emergency Products compressed air powered, high efficiency, multi-stage, venturi based AirPrime™ System. All wetted metallic parts of the priming system are to be of brass and stainless steel construction. Auto Prime Switch Position: Primer is automatically activated when the green "OK TO PUMP" light is "ON", pump pressure is less than 20 PSI, and primer control LED green light is "ON"

Prime Switch Position: "Manually Push" switch to activate primer or use for periodic testing of priming system (even with fire pump is not in gear) The priming system shall have a five year warranty. The priming system shall have a five year warranty.

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Separate controls shall be provided for:

- A-Main pump body
- B-Right intake
- C-Left intake

Y__N__

PRESSURE GOVERNOR - CHASSIS SUPPLIED

The pressure governor furnished with the custom chassis shall be installed at the pump panel.

Y__N__

PIPING

All piping shall be heavy duty 304 grade schedule 10 stainless steel or Class 1 high pressure flexible hose. All stainless steel fittings shall be threaded or welded.

Class 1 flexible hose shall be Black SBR synthetic rubber hose with 300# working and 1200# burst pressure with stainless steel fittings.

Whenever possible, sweep type elbows shall be utilized in order to reduce friction loss, thread-in 45's and 90's will be used elsewhere.

Victaulic or rubber couplings shall be used where necessary to allow flexing of plumbing which will prevent damage or loosening of the piping 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.

Y__N__

SYNFLEX SUCTION, DISCHARGE, PRESSURE AND CONTROL LINES

Small lines within the pump enclosure shall be constructed from Synflex hose. Uses include, but are not limited to such lines as priming control, gauge lines, drain lines, air control valves, pump shift, supplemental cooling, foam flush and air bleeder valves.

Y__N__

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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.

Y___N___

INTAKE RELIEF VALVE

There shall be an Elkhart Brass intake relief valve installed on the suction side of the pump. The valve shall be the preset type at 125 PSI and is adjustable from 75 to 250 PSI, and shall be designed to prevent vibration from altering the setting. The relief outlet shall be directed below the pump with the discharge terminating in a 2-1/2" male NST connection. The discharge shall be away from the pump operator and labeled "Do Not Cap".

Y___N___

U. L. PUMP CERTIFICATION TEST

One (1) certification test shall be performed at the manufacturers on site testing facility by Underwriters Laboratories.

The certification shall include at minimum:

- A) Pumping Test - NFPA 16.13.2
- B) Pumping Engine Overload Test – NFPA 16.13.3
- C) Pressure Control System Test - NFPA 16.13.4
- D) Priming System Tests - NFPA 16.13.5
- E) Vacuum Test - NFPA 16.13.6
- F) Water Tank-To-Pump Flow Test - NFPA 16.13.7
- G) If Fire Pump is Driven by the Chassis Engine: Engine Speed Advancement Interlock Test – NFPA 16.13.8
- H) Gauge and Flowmeter Test – NFPA 16.13.9

A test plate shall be provided at the pump operator's position that gives the rated discharges and pressures together with the speed of the engine as determined by the certification test. The plate

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shall be completely engraved with all information at the factory and attached to the vehicle prior to delivery. The original U. L. Certificate shall be provided upon acceptance and payment of the apparatus in full.

Y___N___

VENTED LUG CAPS AND PLUGS

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

Y___N___

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.

Y___N___

TWO (2) HALE (MIV-E) ELECTRIC MASTER INTAKE VALVES

Both the left and right side suction inlets shall be equipped with a full flow butterfly type valve designed to mount on the fire pump between the suction tube extension and suction tube behind the pump compartment panel.

The entire valve shall be cast, manufactured and tested at the pump manufacturers factory.

When the valve is installed in the fire pump suction, the fire pump shall be capable of achieving an NFPA / UL test rating of 1500 GPM (5678 LPM) through a single 6 inch NST suction hose.

A pressure relief valve shall be provided that is factory pre-set to 125 PSI (9 BAR) and field adjustable from 75 to 250 PSI (5 to 17 BAR).

The pressure relief valve shall provide over-pressure protection for the suction hose even when the intake valve is closed.

An integral relief valve mounting pad shall be provided on the valve body.

This mounting pad shall provide a Hale type 115 4-3/8 inch bolt circle flange for normal installation.

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The mounting pad shall have 2-1/2 inch female NPT threads to permit remote mounting of the relief valve without special adapters.

The outlet of the pressure relief valve shall have 2-1/2 inch NPT threads to allow directing the discharge flow away from the pump operator position.

The inlet valve(s) shall be operated by a 12 VDC electric motor with remote override handwheel located next to the suction tube.

Each valve shall be provided with panel placards indicating control operation.

The placards shall have the status lights to indicate whether the valve is open, closed, or traversing from one position to another.

Each valve shall be provided with a gear actuator that will cycle the valve from OPEN to CLOSED position in no less than 3 seconds.

The gear actuators shall be sealed units designed to provide reliable service in the harsh pump compartment environment.

The ratio of the gear actuator shall be such that the handwheel will close the valve in no more than 10 complete turns.

The 12 VDC motor on the electric operated valve shall be provided with an automatic resetting, thermally compensated, over current protection circuit breaker to protect the 12 VDC motor and apparatus electrical system.

The valve body shall have a 3/4 inch female NPT threaded port on the top to allow installation of an NFPA compliant large diameter hose air bleeder valve.

The air bleeder valve shall be mounted on the operator panel and be controllable by the pump operator.

The valve body shall have a 1/4 inch female NPT threaded port on the bottom to permit connection of an individual water drain valve.

A suction tube extension 7-1/4 inches wide shall be used to allow for the additional length of the inlet valve.

The shorter suction tube extension, along with a 4, 6, or 9 inch suction tube, will keep the suction tube threads within the apparatus running boards while maintaining clearance for adapters.

A panel mounted manual override shall be provided to permit operation of the electric remote control valve in the event of abnormal operating conditions.

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The manual override shall be designed to permit operation of the valve without the use of special tools or disassembly of the pump compartment panel or valve.

Access panels will be provided for ease of service.

Y___N___

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.

Y___N___

TANK TO PUMP

There shall be one 4" Akron gated tank to pump line, with 4" plumbing, piped to the tank sump.

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.

The valve shall be air activated with control located on the pump panel.

Y___N___

TANK FILL - 2-1/2"

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

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

Y___N___

CROSSLAY VINYL FLAPS

Each end of the crosslay bins shall have Black vinyl flaps installed to retain the hose load. The flaps shall be secured with shock cord fasteners.

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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.

Y___N___

DUNNAGE COMPARTMENT

The remaining area behind the pump and speedlays shall be used for additional storage space.

Y___N___

DUNNAGE COMPARTMENT

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

Y___N___

PRE-CONNECTED SPEEDLAYS

Two (2) speedlays compartments fabricated of 12 gauge stainless steel (No Exceptions) shall be provided and located forward of the pump house stacked one over the other and divided as follows:

1. Top section: Capable of holding 200 ft. of 1.75" hose in a double stack load. Piping and valve to be 2" with 1.5"swivel.
2. Bottom section: Capable of holding 200 ft. of 1.75" hose in a double stack load. Piping and valve to be 2" with 1.5" swivel.

The hose swivel will terminate above each tray and will be located toward the ends of the trays to allow the hose to be easily preconnected.

Both speedlays will have welded poly removable bin/tray provided with hand hold cutouts on each side to aid in the removal to allow for easy repacking. Trays shall be perforated to allow hose drainage and air flow.

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

Control handles shall be provided on the pump operators panel.

Y___N___

DISCHARGES LEFT SIDE

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Two (2) 2-1/2" discharges 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.

Y___N___

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.

Y___N___

DISCHARGE RIGHT SIDE

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

Discharge shall terminate with a 3" NST x 4" 30 degree Storz adapter with blind cap and retainer chain.

Y___N___

DISCHARGE LEFT FRONT HOSEBED

One (1) 2-1/2" discharge shall be piped to the left front of the hose bed and terminate with a 2-1/2" chrome male NST adapter.

Discharge shall be controlled from the operator's panel.

Y___N___

DISCHARGE-RIGHT FRONT HOSEBED

One (1) 2-1/2" discharge shall be piped to the right front of the hose bed and terminate with a 2-1/2" NST chrome male adapter.

Discharge shall be controlled from the operator's panel.

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Y___N___

AKRON SLO-CLOZ

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

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

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

Y___N___

PUMP MASTER DRAIN

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

Y___N___

DRAIN VALVES

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

Y___N___

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.

Y___N___

SIDE MOUNTED OPERATOR'S PANEL

CONSTRUCTION

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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. No Exceptions

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 stainless steel removable panels.

Stainless panels to be brushed satin finish 12 gauge 304 material to ensure longevity. No Exceptions

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.

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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

- *One (1) pressure governor control

- *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

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*One liquid level meter with sensor in the water tank

RUNNING BOARDS

Running boards shall be provided on each side of the pump module and extend from the front of the side compartments forward to the back of the cab. Running boards shall be constructed of 1/8" aluminum diamond plate. 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 1.50" structural stainless steel tubing welded to the panel framing and shall be able to support a minimum of 500 pounds. No Exceptions The running board stepping surface will comply with the latest version of NFPA 1901.

ENCLOSED PUMP PANEL

The driver and officers side pump panels and the forward speedlays shall be enclosed behind a ROM satin finished roll-up door, to match the compartment doors on the truck. There shall also be ROM strip lights on both sides of the doors.

PANEL LIGHTING

The side mount pump panel shall be illuminated by four (4) TecNiq (model E10-W000-1) 6.00" LED lights with clear lens.

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

Lights are controlled by a master panel mounted lights switch.

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

4.5" NOSHOK MASTER GAUGES

The master intake and master discharge gauges shall be 4" diameter No-Shok 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

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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" NOSHOK GAUGES

The valve discharge gauges shall be 2½" diameter No-Shok 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.

ICI WATER LEVEL MONITOR

An Innovative Controls SL-10 Series Tank Level Monitor System shall be installed. The system shall include an electronic display module, a pressure transducer-based sender unit, and a 10' connection cable. The display module shall show the volume of water in the tank using 10 superbright easy-to-see LEDs. Tank level indication is enhanced by the use of green LEDs at the full and near-full levels, amber LEDs between ¾ and ¼ tank levels, and red LEDs at the near-

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empty and empty levels. A wide-angle diffusion lens in front of the LEDs creates a 180° viewing angle. The electronic display module shall be waterproof and shock resistant being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome plated panel-mount bezel with a durable easy-to-read polycarbonate insert featuring blue graphics and a water icon.

All programming functions shall be accessed and performed from the front of the display module. The programming includes self-diagnostics, manual or self-calibration, and networking capabilities to connect remote slave displays. Low tank level warnings shall include flashing red LEDs starting below the $\frac{1}{4}$ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm.

The display module shall receive an input signal from a pressure transducer. This stainless steel sender unit shall be installed on the outside of the water tank near the bottom. All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Location of water tank level monitor shall be on the pump operator's panel.

ICI 5-LED REMOTE CAB- MOUNTED SLAVE WATER TANK LEVEL MONITOR

An Innovative Controls SL Series Tank Level Monitor remote cab-mounted mini slave display shall be installed. The system shall include an electronic display module and a 10' connection cable. The display module shall show the volume of water in the tank using 5 easy-to-see LEDs that automatically dim and brighten as the ambient light in the cab changes. Tank level indication is enhanced by the use of a green LED at the full level, amber LEDs at the $\frac{3}{4}$, $\frac{1}{2}$ and $\frac{1}{4}$ tank levels, and a red LED at the empty level. The electronic display module shall be waterproof and shock resistant being encapsulated in a urethane-based potting compound. The potted display module shall be mounted to a chrome plated panel-mount bezel with a durable easy-to-read polycarbonate insert featuring blue graphics and a water icon.

The remote slave display shall receive input data from an Innovative Controls SL Series master display unit and mirror its function. Low tank level warnings shall include flashing a red LED starting below the $\frac{1}{4}$ level, down-chasing LEDs when the tank is almost empty, and an output for an audible alarm.

All wiring, cables and connectors shall be waterproof without the need for sealing grease.

Location of remote water tank level monitor shall be in the cab dash or center console.

Y___N___

WHELEN TANK LEVEL LIGHTS

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There shall be one (1) Whelen PS TANK water level light strip flush mounted vertically on the rear of the unit. The light strips shall include four colors of LED lights, green, blue, amber, and red.

Y___N___

MICROPHONE COMPARTMENT

A Cast Products microphone compartment with interior dimensions of 6 1/4" wide x 7 3/4" high x 5" deep shall be installed in the pump operator's panel area.

Y___N___

AIR HORN BUTTON ON PANEL

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

This button will allow pump operator to activate air horns at any point in time. Button will be waterproof and marked properly.

Y___N___

2-1/2" REAR DIRECT TANK FILL

There shall be one (1) 2.5" Akron Brass style 8825 valve provided and terminate with a Red Head 2.50" 30 degree chrome elbow, with Trident chrome plug with retainer chain. A 3/4" bleeder will be installed.

The valve will be installed on the rear of the tank to the left of the rear dump valve.

Y___N___

DIRECT TANK FILL - 2.50" FIREMAN'S FRIEND CHECK VALVE

There shall be one (1) Fireman's Friend 2.50" Semi-Automatic direct tank fill valve mounted in the rear of the tank. The internally mounted check-type fill valve is capable of flowing at a rate in excess of 1,000 gallons per minute. Self deflecting, requiring no additional diffusion device. Stainless steel, spring actuated piston-type sealing mechanism to minimize seal wear and provide positive sealing of valve after shutting off at feed source.

The inlet will terminate with a 2-1/2" female NST swivel with screen, chrome plug and retainer chain. Inlet shall have a 30 degree turndown to allow for easy hose connection. A 3/4" bleeder will be provided.

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Y___N___

DIRECT TANK FILL LOCATION

The rear direct tank fills where specified shall be mounted below the rear dump valve and piped up through the bottom of the tank using stainless steel a 90 degree sweep elbow.

Y___N___

DUMP VALVE-10" NEWTON ELECTRIC ACTIVATED

There shall be one (1) Newton model 1080-34C 10" square stainless steel dump valve provided and installed center rear of the unit in the lowest portion of the tank. The valve will be electric activated with control switches located in the cab and beside the dump valve.

Y___N___

SIDE DUMP VALVES BETWEEN REAR AXLES

Side dump valves shall be provided on each side of the apparatus located between the rear axles.

Left side dump valve will be a Newton model 1080-34-54-27" electric actuated valve with Newton model 5018SR-34 electric actuated telescoping chute mounted on the driver's side between the tandem rear wheels.

Right side dump valve will be a Newton model 1080-34-54-27" electric actuated with Newton model 5018SR-34 electric actuated telescoping chute mounted on the passenger's side between the tandem rear wheels.

This system shall allow the chutes to extend approximately 17" beyond the valve.

The valves shall be recessed behind the side body panels. The stainless steel slide extensions will extend and retract automatically when the valve is opened. Control switches shall be located in the cab and near each dump valve.

Hinged stainless steel doors painted to match the body color shall be provided over each valve opening. The doors shall open and close automatically upon activation of the valve.

Y___N___

WATER TANK

The UPF Poly water tank shall be constructed of PT3™ polypropylene material. This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum

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protection. Tank shell thickness may vary depending on the application and may range from 1/2" to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank shall have a capacity of 2500 gallons and be equipped with a 6" vent/overflow.

TANK CONSTRUCTION

The Poly water tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include PolyProSeal™ technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3™ polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique Full Floor Design™. Tolerances in design allow for a maximum variation of 1/8" on all dimensions.

CAPACITY CERTIFICATION

All water tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. Each Poly-Tank® III is delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight.

TANKNOLOGY™ TAG

A tag shall be installed on the apparatus in a convenient location and contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include the capacity of the water and foam (s), the maximum fill and pressure rates, the serial number of the tank, the date of manufacture, the tank manufacturer, and contact information. The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

TANK LID

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The tank cover shall be constructed of 1/2" thick PT3™ polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall accommodate the necessary lifting hardware.

TANK FILL TOWER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3™ polypropylene and shall be a minimum dimension of 12" x 12" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the purchaser. The tower shall have a 1/4" thick removable polypropylene screen and a PT3 polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe.

OVERFLOW AND VENT PIPE

The fill tower shall be fitted with an integral 6" ID schedule 40 P.V.C. combination overflow/vent pipe that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction.

TANK SUMP

There shall be one (1) sump standard per tank. The sump shall be constructed of a minimum of 1/2" PT3™ polypropylene and be located in the left front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3" above the inside floor.

TANK OUTLETS

There will be two (2) standard tank outlets: one for the tank-to-pump suction line, which shall be a minimum of 4" coupling and one for a tank fill line which shall be a minimum of a 2"

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N.P.T. coupling. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

WATER TANK MOUNTING

The tank shall rest on the body cross members spaced a maximum of 22" apart, and shall be isolated from the cross members through the use of 1/4" to 1/2" rubber, 2-1/2" wide. The tank shall sit cradle-mounted using four (4) stainless steel corner angles 3" x 3" x 1/4" thick. Angles are welded directly to the body cross members. The angles shall keep the tank from shifting left to right or front to rear. The angles are also isolated from the tank through the use of 1/4" to 1/2" rubber. The tank is designed on the free-floating suspension principle and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The body or hose bed cross braces shall act as water tank retainers.

Y___N___

STAINLESS STEEL BODY& COMPARTMENT CONSTRUCTION

The complete apparatus body and sub frame shall be fabricated of 12 gauge type 304 grade stainless steel sheeting with a tensile strength of 87,000 psi and a yield strength of 39,000 psi.

All body and compartment components shall be break form design. Compartments are constructed of 12 gauge type 304 stainless steel. This shall include compartment floors, side walls and ceiling. No Exception. Compartments shall be formed from a single sheet of metal when possible. The exterior of the compartments shall be solid seam welded. The corner seams shall be caulked with Gray silicone caulking. All burrs shall be removed to eliminate sharp edges.

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

No Exception to this paragraph

COMPARTMENT SUPPORTS

Compartment floor supports shall be provided fabricated of 12 gauge stainless steel 2.00" x 4.00" support members and shall be installed under the compartment floors. The supports shall be formed "U" sections that will extend the full width beneath the compartment floors. The upper body walkway floor will be supported in a similar fashion. No Exception to this paragraph

STAINLESS STEEL SUBFRAME

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A 1.50" x 3.00" stainless steel tubular sub frame shall be fabricated to support the body and tank. Structural stainless steel rails shall run the full length of the body across the top of the chassis frame rails. Appropriate 3.00" stainless steel cross members shall be utilized to ensure rigidity with cross members being space no more than 24" apart.

The sub frame and cross members shall be Mig welded. All compartments and all stainless steel sheeting is TIG welded with 308 stainless steel filler wire.

The complete body structure shall be secured to the chassis frame rails with high grade 5/8" diameter U-bolts.

One inch x three inch heavy duty rubber sill will be installed between the body sub frame and chassis frame rails to prevent stress on the body and tank components. The rubber sill shall be retained by a full length stainless steel channel. No Exception to this paragraph

STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body shall meet NFPA #1901 anti-slip standards.

WHEEL WELLS

12 gauge stainless steel wheel wells shall be an integral part of the body construction.

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

Full one piece circular, 24" deep stainless steel wheel well liners shall be installed. The fender flares shall be bright polished stainless steel and are attached to the wheel well using stainless steel bolts. No Exception to this paragraph

WIRING ACCESS PANELS

Wiring access panels shall be provided in the body interior corner compartments. The panels shall be bolted in place to allow easy removal for service.

FUEL TANK ACCESS

If the apparatus is equipped with a rear frame mounted fuel tank a removable bolted on access panel will be provided in the rear compartment wall.

REMOVAL OF BODY

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

FASTENERS

All fasteners used in securing components to the body shall be type 304 stainless steel. No Exception

COMPARTMENT VENTS

Compartments shall have a minimum of two (2) 4" louvered stainless steel vents per compartment. They shall be installed in the rear wall of each compartment in a fashion to prevent foreign matter and water from entering.

COMPARTMENT DRAINS

Duckbill type rubber floor drains will be installed in the corners of the lower compartment floors.

COMPARTMENTS

L1: 62.00" High x 14.00/28.00" Deep x 60.00" Wide
Door Opening: 53.00" High x 54.00" Wide

L2: 25.00" High x 14.00" Deep x 110.00" Wide
Door Opening: 22.50" High x 51.25" Wide

L3: 62.00" High x 14.00/28.00" Deep x 48.00" Wide
Door Opening: 53.00" High x 42.00" Wide

R1: 51.00" High x 14.00/28.00" Deep x 60.00" Wide
Door Opening: 42.00" High x 54.00" Wide

R2: 14.00" High x 14.00" Deep x 110.00" Wide
Door Opening: 11.50" High x 51.25" Wide

R3: 51.00" High x 28.00" Deep x 48.00" Wide
Door Opening: 42.00" High x 42.00" Wide

At the rear of the body above compartment R3 will a painted stainless steel closeout panel provided to allow for mounting location for the rear warning light.

SQUARE BACK BODY DESIGN

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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. **There shall be a “close-out” at the rear of the body, behind the dump tank mount to make the rear body face symmetrical.**

REAR BUMPER

The rear bumper shall be fabricated of 1.50" x 1.50" and 1.50" x 3.00" structural stainless steel tubing. The bumper shall be fully welded design and shall be welded to the rear side body compartments.

The rear bumper shall be 12" deep and run full width of the vehicle.

BUMPER STEP SURFACE

The bumper step shall be covered with aluminum diamond plate with welded end caps. The bumper stepping surface will comply with the latest version of NFPA 1901.

Y___N___

TOP SIDE BODY TRIM

The top of all side body compartments shall be covered with Aluminum diamond plate.

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

Y___N___

REAR BODY TRIM

Any areas on the rear not covered with Chevron reflective stripping, shall be covered with Aluminum diamond plate.

Y___N___

FRONT COMPARTMENT TRIM

Front exterior wall of the front compartments shall be covered with Aluminum diamond plate.

Y___N___

SIDE BODY POST TRIM

Side body support posts shall be covered with Aluminum diamond plate.

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Y___N___

PUMP HOUSE TRIM

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

Y___N___

STAINLESS STEEL RUB RAILS

Rub rails shall be provided and installed below each side compartment. The rub rail assembly shall be constructed of 1.00" x 1.50" heavy-duty 14-gauge 304 grade stainless steel tubing with black end caps and will be DA finished. Rub rails shall be bolted to the lower exterior edge of the apparatus body, with 0.50" nylon spacers installed between the body and the rub rail.

Y___N___

HOSE BED

A stainless steel hose bed with swirl finish shall be located above the water tank. The hose bed front and side walls shall be free of all sharp objects to prevent hose damage. There shall be two removable floor sections constructed of fiberglass grating, model T-3500, 1" "T" bars with 35% open area. This will allow for proper ventilation and drainage of hose.

Y___N___

FLUSH SIDE BODY PANELS

Hose bed side walls shall extend to outside edge of the side compartments. Panel shall be constructed of 12 gauge 304 grade smooth stainless steel sheeting and be painted job color.

Y___N___

HOSE BED DIVIDERS

Two (2) full length adjustable hose bed dividers shall be located in the hose bed area and shall be fully adjustable by means of stainless steel uni-strut tracking located at the front and rear of the hose bed.

The dividers shall be of "one piece" 1/4" extruded aluminum construction with integral extruded bottom "T" bar which runs full length of the hose bed. A top 1/2" diameter smooth edge is provided to prevent damage to hose.

The dividers shall be bolted in place with stainless steel fasteners and be easily adjusted from side to side with simple hand tools.

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Y___N___

HOSE BED CAPACITY

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

500 Feet of 3.00" DJ hose
1000 Feet of 5.00" LDH hose
200 Feet of 2.50" DJ hose

Y___N___

HOSEBED TARP

A Black vinyl hosebed cover shall be provided with Velcro and twist lock fasteners on the front, shock cords fasteners on the sides with stainless steel hooks, and rear weighted flap with straps.

Y___N___

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.

Y___N___

FOLDING ACCESS STEPS

There shall be four (4) Innovative Controls folding steps provided and installed. Each step shall be designed to exceed the strength, load and traction requirements of NFPA. Each step shall be chrome plated and include a molded gasket to help prevent water ingress and keep the step

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mount from damaging painted surfaces. The step shall include a drain at the bottom to allow any water to escape the assembly.

The folding step shall be spring loaded to hold the step in the upright stowed position while in transit and when not in use.

The step shall include a white LED step light and a backlit logo.

Location: Rear of unit to allow easy access to the hose bed.

Y__N__

ADDITIONAL FOLDING ACCESS STEPS

Four (4) additional Innovative Controls folding steps shall be provided and installed. Each step shall be designed to exceed the strength, load and traction requirements of NFPA. Each step shall be chrome plated and include a molded gasket to help prevent water ingress and keep the step mount from damaging painted surfaces. The step shall include a drain at the bottom to allow any water to escape the assembly.

The folding step shall be spring loaded to hold the step in the upright stowed position while in transit and when not in use.

The step shall include a white LED step light.

Location to be determined at pre-paint inspection.

Y__N__

INTERMEDIATE REAR ACCESS STEP

There shall be a fixed step provided on the rear body panel above the rear dump valve.

The step shall be approximately 10" deep x 48" wide and have top, bottom, and all sides covered with NFPA aluminum treadplate.

Y__N__

ZICO HYDRAULIC PORTABLE TANK SYSTEM

A ZICO Model #PTS-HA, Portable Tank System shall be provided. Unit includes two (2) self-contained hydraulic actuators. These hydraulic actuators create a strong rigid system designed to sustain a maximum load of 500 lbs.

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The PTS-HA shall securely store the portable tank specified over the side compartments and lowers the portable tank to a convenient height at the flip of a switch for quick, easy, and safe retrieval.

An NFPA compliant flashing light shall be provided on each end of the bracket and wired to the hazard light in the cab to activate when system is out of stored position.

LOCATION: The portable tank bracket shall be installed on passenger's side of the apparatus.

CONTROL SWITCH LOCATION

The Zico lift control switch shall be mounted in the passenger side pump panel.

ZICO LIFT PORTABLE TANK STAINLESS STEEL COVER

Y___N___

The complete top and side of the bracket shall be covered with 16 gauge 4F finished stainless steel designed to protect the portable tank.

TANK SIZE

Y___N___

The Zico tank lift system shall be sized to hold a 3000 gallon portable tank.

SUCTION HOSE COMPARTMENT IN HOSEBED

Y___N___

A suction hose compartment will be located in the left side of the hosebed capable of holding (2) 6" x 10' suction hose.

The compartment will be made of 3/16" aluminum and will have a rear access aluminum door with a lift and turn latch.

LADDER COMPARTMENT

Y___N___

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.

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The compartment will be designed to hold a 14' roof ladder and 35' 3 section extension ladder, 10' attic ladder and two (2) pike poles.

Y___N___

LADDER COMPARTMENT DOOR

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

Y___N___

EXTINGUISHER STORAGE COMPARTMENT (DOUBLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided and located, in the front portion of the driver's side rear wheel well area. The compartment will be capable of holding two (2) fire extinguishers. The compartment shall be fabricated of stainless steel and lined to prevent vibration. The compartment shall have a drain hole in the floor.

Y___N___

AIR BOTTLE STORAGE COMPARTMENT (DOUBLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided and located, in the front portion of the officer's side rear wheel well area. The compartment will be capable of holding two (2) spare air bottles. The compartment shall be fabricated of stainless steel and lined to prevent vibration. The compartment shall have a drain hole in the floor.

Y___N___

AIR BOTTLE STORAGE COMPARTMENT (DOUBLE COMPARTMENT)

One (1) spare air bottle compartment shall be provided and located, in the rear portion of the officer's side rear wheel well area. The compartment will be capable of holding two (2) spare air bottles. The compartment shall be fabricated of stainless steel and lined to prevent vibration. The compartment shall have a drain hole in the floor.

Y___N___

COMPARTMENT DOOR(S)

The wheel well compartment(s) where specified will have a vertically hinged painted stainless steel door(s) with a SouthCo twist lock latch. The door(s) shall be labeled: "SPARE SCBA CYLINDER" except for Drivers side forward compartment will be labeled "EXTINGUISHER". Door(s) shall be wired to the door ajar circuit.

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Y___N___

SHELVING - ADJUSTABLE

A total of four (4) adjustable shelves shall be provided and installed in customer specified location.

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

The shelving shall be adjustable by means of a threaded tightener that slides in a track to allow precise adjusting height. All tracking will be stainless steel uni-strut.

Y___N___

SHELVING - ADJUSTABLE

A total of two (2) adjustable shelves shall be provided and installed in customer specified location.

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: TBD

Y___N___

POLY BOARD MOUNTING BOARD

1/2" Black poly board will installed on the back wall of the specified compartment to allow for equipment mounting. The board will be spaced 1/2" from the back wall of the compartment.

Quantity: Two (2)

Location: TBD

Y___N___

TRAYS - PULL OUT

Four (4) Accuride 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.

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The tray shall have a capacity of 300 pounds in the fully extended position.

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

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

LOCATION: TBD

FLOOR MATTING

Y___N___

All compartment floors shall be lined with Black Mateflex 13" X 13" x 9/16" interlocking tiles with tapered edging at the front compartment opening.

ROLLUP DOORS

Y___N___

L1, L3, R1 & R3 compartments shall have R•O•M Series IV roll-up shutter doors with "satin" finish installed. Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

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

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

Shutter bottom rail shall be a one piece double wall extrusion with integrated finger pull. Finger pull shall be curved upward with a linear striated surface to improve operator grip while operating the shutter door. Bottom rail shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene; it will be a double "V" seal to prevent water and debris from entering compartment. Bottom rail lift bar shall be a one piece "D" shaped aluminum extrusion with linear striations to improve operator grip during operation. Lift bar shall have a wall thickness of 0.125". Lift bar shall be supported by no less than two pivot blocks; pivot blocks shall be constructed from Type

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66 Glass filled reinforced nylon for superior strength. Bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

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

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

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

Y__N__

COMPARTMENT DOORS

L2, & R2 doors shall be fabricated of 304 grade stainless steel with 18 gauge inner and outer panels. The doors shall be 3/4" thick and reduce the compartment depth by approximately 5/8" with the door closed. The double panel design provides strength and a tight fit with 5/8" insulation installed between the panels for sound dampening. Doors shall be of a rigid design. Door outer panel edges will be folded and welded to the inner panel. Welding of the inner panel directly to the outer panel face shall not be permitted due to distortion caused by welding. The use of body filler prior to painting of the outer door panels shall not be permitted. **No Exception.** Each door is to have closed cell rubber seal to provide a weather proof seal between the door and compartment. The compartment doors shall pivot on full length stainless steel piano hinges with a 3/16" pin diameter. Hinges shall be welded to compartment wall and bolted to doors with 10-24 stainless steel bolts. Compartment doors will have stainless steel flush bent "D" ring handles. Latching mechanism shall be non-locking safety slam positive latch. Gasket material is placed between the door handles and outer door panels to prevent electrolytic reaction between dissimilar metals to protect paint finish. Mechanism is enclosed in stainless steel not exposed to equipment stored in compartment. Interior of doors shall be left natural stainless with swirl finish applied to give a lasting and pleasing appearance.

DOOR CLOSURES

All horizontally hinged doors shall have power lift gas filled cylinders installed. Doors shall be held open at a 90 degree angle to the body. Closure shall assist in the closing of door once it has past the halfway point.

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DOOR TRIM

The trim around the roll up door shall have a satin finish.

Y___N___

ROLL UP DOOR MODIFICATION - PULL STRAP

One (1) nylon webbing pull strap shall be provided on the interior of each roll up door. The strap shall aid in the closing of taller compartment doors. Compartments L1 & L3 only

Y___N___

ELECTRICAL MANAGEMENT SYSTEM

The apparatus shall be equipped with a multiplexed electrical system. The multiplex system shall consist of all solid-state components contained inside aluminum extrusions referred to as nodes. Each node shall consist of (24) output channels and (24) input channels. All inputs and outputs will be configured into a scaleable electrical harness utilizing Duetsche connectors. The nodes must be waterproof and not require special mounting requirements.

The system, at a minimum, shall be capable of performing the following functions: load management sequencing, switch loads, receive digital and analog signals, perform and report diagnostics, continuously report vehicle status and the system is expandable.

“Real Time” data can be reported and displayed through several operator interface modules. The VFD is the display, user interface display. As an option the EL “Vista” provides a built-in, audible alarm and menu-driven, input switches.

Placement of nodes throughout the apparatus enables a reduction in wire harness bundles, elimination of redundant harnesses and separate circuit boards, relay and circuit breakers, electrical hardware, separate electrical or interlock subsystems and associated electronics for controlling various electrical loads and inputs.

The multiplex system shall be field-re-programmable and re-configurable by any authorized dealer or service center. This complete system shall eliminate the need for the following separate components or devices: load manager, load sequencer, warning lamp flasher, headlamp flasher, door open notification system, interlock modules, separate volt meter and ammeter and temperature monitor.

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The Base System Shall Include:

- Total Load Management
- Load Shedding Capabilities
- Load Sequencing Capabilities
- “On-Board” Diagnostics Readout
- Very Reliable, Solid-State Hardware
- Error Reporting
- Display Analog Data (pressure, temperature...)
- Continuous system monitoring and reporting
- Emergency warning lamp flasher
- Door Ajar System
- Field Configurable
- Expandability Capabilities
- Advanced PC Diagnostics

As-built wiring harness drawings and a master circuit list of electrical circuits that the apparatus builder installs shall be furnished in the delivery manuals. These schematics must show the electrical system broken down into separate functions, or small groups of related functions. Schematics shall depict circuit numbers, electrical components, harnesses, and connectors from beginning to end.

All wiring and electrical equipment shall meet N.F.P.A. 1901 (2016 edition) and SAE standards. A master optical warning device switch that energizes all of the optical warning devices shall be provided.

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

All wiring harnesses and associated wiring shall be secured with nylon "ultra violet resistant" cable ties or bolted to the body with cable clamps.

Polyolefin "heat shrink" tubing with adhesive or Deutsch water tight connectors shall be used on all exterior wiring connections.

Flexible non-conductive polyurethane film shall be sprayed on all terminal studs, relays, starter, batteries, etc. To prevent corrosion.

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Y___N___

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.

Y___N___

CLEARANCE LIGHTS

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

On apparatus 30 feet in length or longer, a Trucklite model 60072Y Amber LED turn signal light with stainless steel flange shall be mounted one (1) each side in rear wheel well area at approximately running board height.

Y___N___

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 3SCODCR series 3.00" round LED lights shall be utilized. Depending on body application the lights will either be mounted in a rubber grommet or surface mounted with a chrome flange.

Y___N___

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".

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Y___N___

LICENSE PLATE LIGHT

One (1) Trucklite model 15055 LED license plate light and bracket shall be provided on the rear of the unit.

EMERGENCY WARNING LIGHT SWITCH CONTROLS

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

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

Y___N___

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.

Y___N___

R.O.M COMPARTMENT LIGHTING

Ridgefield Fire Department

Engine Tanker Specifications

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

Compartment lighting shall activate automatically by the opening and closing of the door.

All main apparatus body compartments shall have door ajar switches.

Y___N___

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.

TecNiq E10-WSOO-1 6.00" LED lights mounted in a stainless steel bracket shall be utilized.

Two (2) lights mounted under the rear step.

One (1) light located each side under the pump panel running boards.

Y___N___

PUMP COMPARTMENT LIGHT

One (1) SoundOff model ECVCSLLED10-10" LED pump compartment light shall be provided within the pump enclosure. The control switch shall be located on the pump operator's panel.

Y___N___

HOSE BED LIGHTS

There shall be two (2) TecNiq (model E10-W000-1) 6.00" LED lights with clear lens lights mounted at the front of the hose bed. The lights will be activated when the parking brake is applied.

Y___N___

DUNNAGE AREA LIGHTS

There shall be two (2) Whelen 3SCOCD CR series 3.00" round LED lights provided and mounted in the dunnage area to provide adequate illumination of this area. The lights will be activated when the parking brake is applied.

Y___N___

NFPA APPROVED UPPER LEVEL LIGHT PACKAGE

Ridgefield Fire Department

Engine Tanker Specifications

ZONE A - FRONT UPPER

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

Y___N___

ZONE B & D - SIDE UPPER

Two (2) Whelen M9 Super LED lights with chrome bezels will be mounted one each side on the upper rear side corners of the body.

Y___N___

ZONE C - REAR UPPER

Four (4) Whelen M9 Super LED lights with chrome bezels will be mounted on the upper rear of the body.

Y___N___

UPPER LEVEL LIGHT LENS COLOR

The upper level lights shall have red lenses.

Lower lights lens shall be split Blue/Amber. The amber section shall flash when the vehicle is placed in reverse gear.

Y___N___

WHELEN LOWER LEVEL LIGHTING

ZONE A - LOWER

Two (2) LED lights provided by chassis manufacture.

ZONE B & D- SIDE LOWER

Two (2) LED forward lower side lights provided by the chassis manufacture.

Four (4) M7 Super LED with chrome bezel mounted two (2) each side in the rear body fender area.

ZONE C - LOWER

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

Y___N___

Ridgefield Fire Department

Engine Tanker Specifications

LOWER LEVEL LIGHT LENS COLOR

The lower level lights shall have red lenses.

Y___N___

ELECTRONIC SIREN

The electronic siren will be furnished with the custom chassis.

Y___N___

SIREN SPEAKER

The siren speaker will be furnished with the custom chassis.

Y___N___

WHELEN PIONEER FLOOD LIGHTHEAD

Whelen Pioneer Plus™ Model # PFH2 shall be provided. The 150 watt +12v DC Pioneer light head shall incorporate Super-LED® floodlight installed in a die-cast white powder coated aluminum housing. The PFH2 configuration shall consist of 36 white Super-LEDs. The PFH2 will produce 17,750 useable Lumens. The PFH2 assembly will use a collimator/metalized redux flood reflector assembly with Proclera™ silicone optics and a clear non-optic polycarbonate lens. The lens/reflector assembly shall utilize a liquid injected molded silicone gasket to be resistant to water, moisture, dust, and other environmental conditions. The hard coated lens shall provide extended life/luster protection against UV and chemical stresses. The PFH2 shall be vibration resistant. The Pioneer™ PC boards shall be conformal coated for additional protection. Two breathable membrane patches shall be installed to the housing to maintain a consistent internal pressure. The PFH2 shall have extended LED operation with low current consumption and low operating temperature. The PFH2 shall be furnished with a 20' 4/C 16GA cable. The PFH2 is covered by a five year factory warranty. Mount options are purchase separately.

Lights will be controlled by three individual switches located in the cab labeled Left Scene, Right Scene, Rear Scene.

Six (6) lights shall be provided and mounted: Two (2) located each side of the body, one (1) at the front and one (1) at the rear, and two (2) located on the rear face of the unit.

Y___N___

HARRISON HYDRAULIC DRIVEN AC ELECTRIC SYSTEM

The generator shall be one (1) Harrison MAS Hydraulic Driven Generator rated at 10,000 watts, 84/42 amps, 120/240VAC, 60Hz, 1-phase.

Ridgefield Fire Department

Engine Tanker Specifications

The generator shall be designed and assembled by a company with no less than 20 years experience in the manufacture of hydraulic driven generators.

The generator shall use a structural steel frame which affords protection to the components and provides a unitized mounting module.

The generator shall use a cover consisting of NFPA approved diamond tread plate.

The generator shall use a Self-Sealing Air Intake to prevent recirculation of exhaust air.

The generator shall use a Twin Draft Air Duct for the alternator and heat exchanger; located on the same side of the generator.

The generator shall be designed to utilize Dual-Fan Technology for cooling.

The generator shall use a single heat exchanger to cool the hydraulic oil.

The generator shall use an industrial type alternator with heavy-duty bearings and a brushless design.

The generator shall use an axial piston hydraulic motor.

The generator shall use an axial piston variable displacement hydraulic pump.

The generator shall use a meter to monitor the frequency, voltage and amperage of each leg.

The generator shall have top access to the oil filter, oil fill tube and electrical interface box.

The generator shall not utilize electronic controls or a multiplex system to control the frequency.

The generator shall be capable of producing the full nameplate power when driven from the vehicle PTO from idle to maximum engine speed.

The generator shall be capable of being used while vehicle is either stationary or in motion.

The generator shall be capable of normal operation using a commonly available premium hydraulic oil; Mobile DTE series or equivalent. All fluid service points shall be in close proximity to the reservoir for ease of scheduled maintenance.

When properly installed, the generator shall be warranted for a period of not less than two (2) years or 2000 hours, whichever should come first.

Y___N___

LINE VOLTAGE ELECTRICAL SYSTEM

GENERAL REQUIREMENTS

Stability

Any fixed line voltage power source producing alternating current (ac) shall produce electric power at 60 Hz, ± 3 Hz when producing power at all levels between no load and full rated power. Any fixed line voltage power source shall produce electric power at the rated voltage ± 10

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Engine Tanker Specifications

percent when producing power at all levels between no load and full rated power. The maximum voltage supplied to portable equipment shall not exceed 275 volts to ground. Higher voltage shall be permitted only when used to operate fixed wired, permanently mounted equipment on the apparatus.

Conformance with National Electrical Code

All components, equipment, and installation procedures shall conform to *NFPA 70, National Electrical Code*, except where superseded by the requirements of this chapter. Where the requirements of this chapter differ from those in *NFPA 70*, the requirements in this chapter shall apply.

Where available, line voltage electrical system equipment and materials included on the apparatus shall be listed and used only in the manner for which they have been listed. All equipment and materials shall be installed in accordance with the manufacturer's instructions.

Location Ratings

Any equipment used in a dry location shall be listed for dry locations. Any equipment used in a wet location shall be listed for wet locations. Any equipment, except a PTO-driven generator, used in an underbody or under chassis location that is subject to road spray shall be either listed as Type 4 or mounted in an enclosure that is listed as Type 4. If a PTO-driven generator is located in an underbody or under chassis location, the installation shall include a shield to prevent road spray from splashing directly on the generator.

Grounding

Grounding shall be in accordance with 250.34(A) and 250.34(B) of *NFPA 70*. Ungrounded systems shall not be used. Only stranded or braided copper conductors shall be used for grounding and bonding. The grounded current-carrying conductor (neutral) shall be insulated from the equipment-grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray in accordance with 200.6, "Means of Identifying Grounded Conductors," of *NFPA 70*. Any bonding screws, straps, or buses in the distribution panel board or in other system components between the neutral and equipment-grounding conductor shall be removed and discarded.

Bonding

The neutral conductor of the power source shall be bonded to the vehicle frame. The neutral bonding connection shall occur only at the power source. In addition to the bonding required for the low voltage return current, each body and each driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor.

The conductor shall have a minimum amperage rating, as defined in 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*, of 115 percent of the rated amperage on the

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Engine Tanker Specifications

power source specification label. A single conductor that is sized to meet the low voltage and line voltage requirements shall be permitted to be used.

Ground Fault Circuit Interrupters

In special service vehicles incorporating a lavatory, sink, toilet, shower, or tub, 120 V, 15 or 20 A receptacles within 6 ft (1.8 m) of these fixtures shall have ground fault circuit interrupter (GFCI) protection. GFCIs integrated into outlets or circuit breakers or as stand-alone devices shall be permitted to be used in situations.

Power Source General Requirements

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source. The power source shall be shielded from contamination that would prevent the power source from operating within its design specifications.

Power Source Rating

For power sources of 8 kW or larger, the power source manufacturer shall declare the continuous duty rating that the power source can provide when installed on fire apparatus according to the manufacturer's instructions and run at 120°F (49°C) air intake temperature at 2000 ft (600 m) above sea level.

The rating on the power source specification label shall not exceed the declared rating from the power source manufacturer.

Access shall be provided to permit both routine maintenance and removal of the power source for major servicing. The power source shall be located such that neither it nor its mounting brackets interfere with the routine maintenance of the fire apparatus.

Instrumentation

If the power source is rated at less than 3 kW, a "Power On" indicator shall be provided. If the power source is rated at 3 kW or more but less than 8 kW, a voltmeter shall be provided. If the power source is rated at 8 kW or more, the following instrumentation shall be provided at an operator's panel:

- 1) Voltmeter
- 2) Current meters for each ungrounded leg
- 3) Frequency (Hz) meter
- 4) Power source hour meter

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Engine Tanker Specifications

The instrumentation shall be permanently mounted at an operator's panel. The instruments shall be located in a plane facing the operator. Gauges, switches, or other instruments on this panel shall each have a label to indicate their function.

The instruments and other line voltage equipment and controls shall be protected from mechanical damage and not obstructed by tool mounting or equipment storage.

An instruction plate(s) that provides the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

Operation

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

Where the generator is driven by the chassis engine and engine compression brakes or engine exhaust brakes are furnished, they shall be automatically disengaged for generator operations.

Any control device used in the generator system power train between the engine and the generator shall be equipped with a means to prevent unintentional movement of the control device from its set position in the power generation mode.

If there is permanent wiring on the apparatus that is designed to be connected to the power source, a power source specification label that is permanently attached to the apparatus at the operator's control station shall provide the operator with the information required.

The power source, at any load, shall not produce a noise level that exceeds 90 dBA in any driving compartment, crew compartment, or onboard command area with windows and doors closed or at any operator's station on the apparatus.

Power Supply Assembly

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 12 ft (4 m) in length.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source.

If the power supply assembly connects to the vibrating part of a generator (not a connection on the base), the conductors shall be flexible cord or other fine-stranded conductors enclosed in

Ridgefield Fire Department

Engine Tanker Specifications

metallic or nonmetallic liquid tight flexible conduit rated for wet locations and temperatures not less than 194°F (90°C).

Over-Current Protection

Manually re-settable over current devices shall be installed to protect the line voltage electrical system components.

Power Source Protection

A main over current protection device shall be provided that is either incorporated in the power source or connected to the power source by a power supply assembly.

The size of the main over current protection device shall not exceed 100 percent of the rated amperage stated on the power source specification label or the rating of the next larger available size over current protection device, where so recommended by the power source manufacturer.

If the main over current protection device is subject to road spray, the unit shall be housed in a Type 4-rated enclosure.

Branch Circuit Over-current Protection

Over current protection devices shall be provided for each individual circuit and shall be sized at not less than 15 amps in accordance with 240.4, "Protection of Conductors," of *NFPA 70*.

Any panel board shall have a main breaker where the panel has six or more individual branch circuits or the power source is rated 8 kW or larger.

Each over current protection device shall be marked with a label to identify the function of the circuit it protects.

Dedicated circuits shall be provided for any large appliance or device (air conditioning units, large motors, etc.) that requires 60 percent or more of the rated capacity of the circuit to which it is connected, and that circuit shall serve no other purpose.

Panelboards

All fixed power sources shall be hardwired to a permanently mounted panel board unless one of the following conditions exists:

- 1) All line voltage power connections are made through receptacles on the power source and the receptacles are protected by integrated over current devices.
- 2) Only one circuit is hardwired to the power source, which is protected by an integrated over current device.

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Engine Tanker Specifications

The panel shall be visible and located so that there is unimpeded access to the panel board controls. All panel boards shall be designed for use in their intended location. The panel(s) shall be protected from mechanical damage, tool mounting, and equipment storage.

Where the power source is 120/240 V and 120 V loads are connected, the apparatus manufacturer or line voltage system installer shall consider load balancing to the extent that it is possible.

Wiring Methods

Fixed wiring systems shall be limited to the following:

1) Metallic or nonmetallic liquid tight flexible conduit rated at temperatures not less than 194°F (90°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C)

2) Type SOW, SOOW, SEOW, or SEOOW flexible cord rated at 600 V and at temperatures not less than 194°F (90°C)

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be arranged as follows:

1) Separated by a minimum distance of 12 in. (300 mm) from exhaust piping or shielded from such piping

2) Separated from fuel lines by a minimum distance of 6 in. (150 mm)

A means shall be provided to allow “flexing” between the driving and crew compartment, the body, and other areas or equipment whose movement would stress the wiring.

Electrical cord or conduit shall be supported within 6 in. (150 mm) of any junction box and at a minimum of every 24 in. (600 mm) of run.

Supports shall be made of nonmetallic materials or of corrosion-resistant or corrosion-protected metal. All supports shall be of a design that does not cut or abrade the conduit or cord and shall be mechanically fastened to the apparatus.

Only fittings and components listed for the type of cord or conduit being installed shall be used.

Splices shall be made only in a listed junction box.

Additional Requirements for Flexible Cord Installations

Ridgefield Fire Department

Engine Tanker Specifications

Where flexible cord is used in any location where it could be damaged, it shall be protected by installation in conduit, enclosures, or guards.

Where flexible cord penetrates a metal surface, rubber or plastic grommets or bushings shall be installed.

Wiring Identification

Each line voltage circuit originating from the main panel board shall be identified.

The wire or circuit identification either shall reference a wiring diagram or wire list or shall indicate the final termination point of the circuit.

Where pre-wiring for future power sources or devices exists, the un-terminated ends shall be marked with a label showing their wire size and intended function.

Wiring System Components

Only stranded copper conductors with an insulation rated for temperatures of at least 194°F (90°C) and wet locations shall be used. Conductors in flexible cord shall be sized in accordance with Table 400.5(A) of *NFPA 70*.

Conductors used in conduit shall be sized in accordance with 310.15, “Ampacities for Conductors Rated 0–2000 Volts,” of *NFPA 70*. Aluminum or copper-clad aluminum conductors shall not be used.

All boxes shall conform to and be mounted in accordance with Article 314, “Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Manholes,” of *NFPA 70*. All boxes shall be accessible using ordinary hand tools. Boxes shall not be permitted behind welded or pop-riveted panels.

The maximum number of conductors permitted in any box shall be in accordance with 314.16, “Number of Conductors in Outlet, Device, and Junction Boxes, and Conduit Bodies,” of *NFPA 70*.

All wiring connections and terminations shall provide a positive mechanical and electrical connection. Connectors shall be installed in accordance with the manufacturer’s instructions. Wire nuts or insulation displacement and insulation piercing connectors shall not be used.

Each switch shall indicate the position of its contact points (i.e., open or closed) and shall be rated for the continuous operation of the load being controlled. All switches shall be marked with a label indicating the function of the switch. Circuit breakers used as switches shall be “switch rated” (SWD) or better. Switches shall simultaneously open all associated line voltage conductors. Switching of the neutral conductor alone shall not be permitted.

Ridgefield Fire Department

Engine Tanker Specifications

Line voltage circuits controlled by low voltage circuits shall be wired through properly rated relays in listed enclosures that control all non-grounded current-carrying conductors.

Receptacles and Inlet Devices

Wet and Dry Locations

All wet location receptacle outlets and inlet devices, including those on hardwired, remote power distribution boxes, shall be of the grounding type, provided with a wet location cover, and installed in accordance with Section 406.8, "Receptacles in Damp or Wet Locations," of *NFPA 70*.

All receptacles located in a wet location shall be not less than 24 in. (600 mm) from the ground. Receptacles on off road fire apparatus shall be a minimum of 30 in. (750 mm) from the ground. All receptacles located in a dry location shall be of the grounding type and shall be at least 12 in. (300 mm) above the interior floor height. No receptacle shall be installed in a face-up position.

The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical.

Receptacle Label

Each receptacle shall be marked with a label indicating the nominal line voltage (120 volts or 240 volts) and the current rating in amps of the circuit. If the receptacle is DC or other than single phase, that information shall also be marked on the label.

All receptacles and electrical inlet devices shall be listed to UL 498, *Standard for Safety Attachment Plugs and Receptacles*, or other recognized performance standards.

Receptacles used for DC voltages shall be rated for DC service.

Y___N___

LOAD CENTER

A, Square D, breaker box shall be provided with separate breakers for each light and/or outlet. Breakers will be rated to load demand. The load center shall be installed in customer specified location.

Y___N___

CIRCUIT BREAKERS

Ridgefield Fire Department

Engine Tanker Specifications

Individual breakers shall be provided for all online equipment to isolate a tripped breaker from affecting any other online item.

Y___N___

ELECTRIC CABLE REEL

One (1) Hannay #ECR-1620-17-18 series electric cable reel with electric rewind, shall be provided on the apparatus. Reel shall have three (3) conductor wiring and three (3) fully enclosed collector rings. The reel shall be rated for continuous duty and installed to be easily accessible for removal, cord access, maintenance, and servicing.

The power rewind cable reel spool areas shall be visible to the operator during the rewind operation, or the reel spools shall be encapsulated to prevent cable from spooling off the reel. Power rewind type reels shall have the control in a position where the operator can safely observe the rewinding operations. The rewind control or crank shall not be over 72 inches above the operator's standing position.

The 12-volt electrical rewind supply cable shall be adequate size for reel capacity and protected with a circuit breaker sized for the cable and located at the power source. The rewind control shall be a Hannay #900-30 push sealed button with operational label next to button.

REEL CAPACITY

Reel shall be designed to hold 110 percent of the capacity needed for the intended cable length. The wire size shall be in accordance with NEC Table 400-5(A).

LABELING

A label shall be provided in a readily visible location adjacent to any permanently connected reel. It shall indicate the following: Current rating, Current type, Phase, Voltage, Total cable length.

ELECTRICAL SUPPLY WIRING TO REEL

The wiring shall terminate in a sealed conduit box at the reel with mechanical type connectors for quick removal of reel. The reel shall be wired to the breaker box and circuit breaker sized to wire size.

ELECTRICAL CORD

The reel shall be provided with two hundred fifty feet (250') of 10/3 yellow electrical cable, type SEO W-A, 30 amp, 120 volt wire.

Ridgefield Fire Department

Engine Tanker Specifications

REEL MOUNTING LOCATION

Reel to be mounted in compartment as directed by the Fire Department.

Y___N___

PAINT AND PREPARATION

All metal surfaces will be properly sanded, prepared and finished ready for our Axalta Coating Systems pretreatment. This is done to insure optimum adhesion, corrosion resistance, and durability.

After pretreatment, 1220S Axalta Coating Systems 5000 URO primer filler is applied designed to fill any minor surface defects and provide an adhesion layer between the pretreatment and the Imron Base Coat/Clear Coat. This is also applied to improve color gloss, retention, and durability of the paint.

Next the URO primer will be sanded to a smooth prepainting surface. The surface will be decontaminated and prepared for application of High Solids Axalta Coating Systems Productive Base Coat/Clear Coat finish to complete the finished paint process.

A full inspection is performed of Defects, Depth Imagery, Gloss, Film Build, Color Match and Texture, all to meet or exceed Axalta Coating Systems OEM fleet finish specifications.

Body assemblies that cannot be finish painted upon assembly shall be painted prior to finish assembly. All doors are removed and painted separate from the body.

Prior to reassembly and reinstallation of lights, handrails, door hardware, and any miscellaneous items; a gasket material or silicone sealant shall be applied to prevent damage to the finish painted surfaces and to protect against electrolysis between dissimilar metals.

Touch up paint shall be provided for each color paint used.

The complete apparatus body will be painted a single color to match the color of the cab. The cab shall remain as painted from the chassis supplier.

Paint Color TBD - Paint #TBD

LETTERING

Lettering shall be provided. It shall be computer generated, non-reflective, Gold Metallic Acrylic Vinyl Applique with a black border. Lettering shall be the same as existing Ridgefield Engine 2

Ridgefield Fire Department

Engine Tanker Specifications

Computer generated lettering provides a proportional layout design and durable finish.

Y___N___

REFLECTIVE STRIPING

A reflective stripe shall be applied to the unit to match Ridgefield Engine 2

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.

Y___N___

REFLECTIVE CHEVRON - NFPA 15.9.3.2

The entire 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 diamond grade Red & Fluorescent Yellow.

Y___N___

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.

Y___N___

PORTABLE TANK

A 3000 gallon portable tank will be included. The tank will be a Fol-Da-Tank model FDTA-3000, 22 ounce yellow HPR "High Performance Rubber" with aluminum frame.

Y___N___

SUCTION HOSE

One (1) Firequip Maxi-Flex 6" x 10' light weight PVC Suction hose with male and 6" long handled female couplers.

Y___N___

SUCTION HOSE STRAINER

One (1) South Park #BS4522AC, 6.00" barrel strainer will be provided and mounted in customer specified location.

Ridgefield Fire Department

Engine Tanker Specifications

Y___N___

WHEEL CHOCKS

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

Y___N___

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:

Y___N___

SPANNER WRENCH SET

One (1) set 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.

Location:

Y___N___

SAFETY FIRE VEST

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

Y___N___

TRAFFIC CONES

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

Y___N___

AUTOMATIC EXTERNAL DEFIBRILLATOR (AED)

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