

TOWN OF FREMONT, INDIANA

FIRE DEPARTMENT

**PUMPER TANKER
SPECIFICATIONS**

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes

No

INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery to the **Fremont Fire Department** of a complete fire apparatus equipped as hereinafter specified. With the view of obtaining the best results and the most acceptable apparatus for service, these specifications cover only the general requirements as to the type of construction and tests to which the apparatus must conform, together with certain details to furnish equipment and appliances with which the successful bidder must conform. Minor details of construction and materials, where not otherwise specified, are left to the discretion of the contractor who shall be solely responsible for the design and construction of all features. The NATIONAL FIRE PROTECTION ASSOCIATION pamphlet #1901 current edition for Motor Vehicle Apparatus, unless otherwise specified in these specifications shall prevail.

ONLY THE SPECIFIED FIREFIGHTING SUPPORT EQUIPMENT LISTED IN THESE SPECIFICATIONS SHALL BE PROVIDED.

The apparatus shall conform to all Federal motor vehicle safety standards.

QUALITY AND WORKMANSHIP

Construction must be rugged, and design must be certified to carry the loads as specified and to meet the road and speed requirements as set forth under "PERFORMANCE TESTS AND REQUIREMENTS" of NFPA Pamphlet #1901 current edition.

Welding shall not be employed in the assembly of the apparatus in a manner that will prevent the removal of major components for service and/or repair.

ROAD TEST

All road tests will be performed per NFPA Pamphlet #1901 current edition requirements.

NFPA REQUIRED ITEMS

The purchaser shall be responsible for providing all equipment items required by NFPA pamphlet that are not otherwise indicated or addressed in these specifications.

[PAGES 2-5 INTENTIONALLY OMITTED]

[SEE PAGE 6]

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Yes No

SEATING CAPACITY PLATE

A permanent plate indicating seat belt use and occupancy shall be installed in a visible location.

HELMET WARNING PLATE

A permanent plate stating "DO NOT WEAR HELMET" shall be installed in a visible location.

FLUID CAPACITY PLATE

A permanent plate listing all fluids and capacities shall be installed in a visible location.

OVERALL HEIGHT PLATE

A plate indicating overall height, overall length, overall width and the vehicle GVRW shall be installed in a location visible to driver.

TAILBOARD PLATE

A permanent plate shall be installed at the rear indicating "DO NOT RIDE ON REAR STEP".

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Yes No

SPARTAN METRO STAR CUSTOM CHASSIS

MODEL

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

MODEL YEAR

The chassis shall have a vehicle identification number that reflects a 2024 model year.

COUNTRY OF SERVICE

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

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

CAB AND CHASSIS LABELING LANGUAGE

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

The following labels shall be Innovative Controls brand, each including a decorative chrome bezel (where applicable):

- Shoreline
- Aerial Stowed
- Aerial Breakers 2
- Air Conditioner
- Cab Tilt Plate
- Air Compressor Breaker
- Battery Conditioner Breaker
- Helmet Caution
- Horn Tag
- Q2B Tag
- Load Center Plate
- Not a Step Label
- Occupancy Tag
- Do Not Move
- Occupants Must Be Seated
- Do Not Stand
- Danger Do Not Weld
- Danger--Untrained Operator
- DEF Fill Access (Including Additional 2907 Optional Labels)
- Battery Direct
- Kneeling
- IFS Air Fault

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Yes No

- Engine Brake
- Retarder
- LR 100 Amp Node
- 300 Amp EPU
- 100 Amp Front O/R Node
- 100 Amp T/T Node
- 100 Amp RR O/R Node
- 10 Amp EPU
- Master Power
- 12 Volt Power
- Aerial Hours
- Pump In Drive

Windshield Washer Fluid

APPARATUS TYPE

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

VEHICLE TYPE

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

VEHICLE ANGLE OF APPROACH PACKAGE

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

NFPA1901 Angle of Approach definition:

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

AXLE CONFIGURATION

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

GROSS AXLE WEIGHT RATINGS FRONT

The front gross axle weight rating (GAWR) of the chassis shall be 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.

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Yes No

GROSS AXLE WEIGHT RATINGS REAR

The rear gross axle weight rating (GAWR) of the chassis shall be 35,000 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. Chassis driveline pump provisions shall include an interlock feature for automatic setting of the park brake when the vehicle is shifted into pump mode while the transmission is in neutral and the transmission output speed translates to less than 1 mph. When the conditions are met the driver side parking brake valve shall activate. Once shifted to road mode the condition for electric automatic brake engagement is no longer present and the driver's parking brake control valve shall function normally.

WATER & FOAM TANK CAPACITY

The chassis shall include a carrying capacity of 1501 gallons (5681 liters) to 2200 gallons (8327 liters). The water and/or foam tank(s) shall be supplied and installed by the apparatus manufacturer.

CAB STYLE

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

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

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

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

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

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 144.60 inches with 67.50 inches from the centerline of the front of the axle to the back of the cab.

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Yes No

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

The cab shall offer an interior height of 57.50 inches from the front floor to the headliner and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 65.38 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

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

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

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

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

CAB FRONT FASCIA

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

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

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

FRONT GRILLE

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

CAB UNDERCOAT

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

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Yes No

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 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 Sikkens paint.

CAB PAINT PRIMARY/LOWER COLOR

The primary/lower paint color shall be: Red to match previous apparatus

CAB PAINT SECONDARY/UPPER COLOR

The secondary/upper paint color shall be: Black to match previous apparatus

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

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

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Yes No

CAB PAINT INTERIOR

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

CAB ENTRY DOORS

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

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

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

CAB ENTRY DOOR TYPE

All cab entry doors shall be full length in design to fully enclose the lower cab steps. Entry doors shall include Pollak mechanical plunger style switches for electrical component activation.

CAB INSULATION

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

LH EXTERIOR REAR COMPARTMENT

The cab shall offer an exterior compartment on the left side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 85.19 inches high. The compartment size shall be 11.34 inches wide X 85.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 84.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. The door shall open towards the rear of the cab. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

LEFT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the left side of the cab. The strip light shall be 43.00 inches long and shall include twelve (12) bright white Gen3 LEDs.

LH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the left hand exterior compartment shall have a multi-tone black-black texture finish.

RH EXTERIOR REAR COMPARTMENT

The cab shall offer an exterior compartment on the right side of the cab behind the rear door. The compartment opening shall be 10.00 inches wide X 85.19 inches high. The compartment size shall be 11.34 inches wide X 85.19 inches high X 21.19 inches deep. The compartment shall have a 10.63 inch wide, 84.00 inch high and 1.50 inch thick hinged box pan style flush mount door with a bright aluminum tread plate inner panel and a bent D-ring slam latch. The door shall open towards the rear

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Yes No

of the cab. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

RIGHT HAND EXTERIOR REAR COMPARTMENT LIGHTING

There shall be one (1) SoundOff Signal brand LED strip light installed to illuminate the exterior rear compartment on the right side of the cab. The strip light shall be 43.00 inches long and shall include twelve (12) bright white Gen3 LEDs.

RH EXTERIOR COMPARTMENT INTERIOR FINISH

The interior of the right hand exterior compartment shall have a multi-tone black-black texture finish.

CAB STRUCTURAL WARRANTY

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

CAB TEST INFORMATION

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

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

ELECTRICAL SYSTEM

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

MULTIPLEX DISPLAY

The multiplex electrical system shall include a Weldon Vista IV display which shall be located on the left side of the dash in the switch panel. The Vista IV shall feature a full color LCD display screen which includes a message bar displaying the time of day and important messages requiring acknowledgement by the user which shall all be displayed on the top of the screen in the order they are received. There shall be eight (8) push button virtual controls, four (4) on each side of the display for the on-board diagnostics. The display screen shall be video ready for back-up cameras, thermal cameras, and DVD.

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

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Complies**

Yes No

LOAD MANAGEMENT SYSTEM

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

DATA RECORDING SYSTEM

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

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

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

ACCESSORY POWER

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

AUXILIARY ACCESSORY POWER

An auxiliary six (6) position Blue Sea Systems 5025 blade type fuse panel shall be installed behind the driver's seat. The fuse panel shall be protected by a 40 amp fuse. The panel shall be capable of carrying up to a maximum 40 amp battery direct load.

EXTERIOR ELECTRICAL TERMINAL COATING

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

ELECTRICAL SYSTEM WARRANTY

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

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Yes No

ENGINE

The chassis engine shall be a Cummins L9 engine. The L9 engine shall be an in-line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 450 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1250 foot pounds of torque at 1200 RPM with 543 cubic inches (8.9 liters) of displacement.

The L9 engine shall feature a VGT™ Turbocharger, a high pressure common rail fuel system, fully integrated electronic controls with an electronic governor, and shall be EPA certified to meet the 2021 emissions standards using cooled exhaust gas recirculation and selective catalytic reduction technology.

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

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

CAB ENGINE TUNNEL

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

DIESEL PARTICULATE FILTER CONTROLS

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

ENGINE PROGRAMMING HIGH IDLE SPEED

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

ENGINE HIGH IDLE CONTROL

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

ENGINE PROGRAMMING ROAD SPEED GOVERNOR

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

AUXILIARY ENGINE BRAKE

The engine shall utilize a variable geometry turbo (VGT). The VGT auxiliary engine brake shall be an integral part of the turbo and shall offer a variable rate of exhaust flow, which when activated shall slow the engine and in turn slow the vehicle.

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Yes No

The VGT shall actuate the vehicle's brake lights when engaged as an auxiliary brake. A cutout relay shall be installed to disable the VGT when in pump mode or when an ABS event occurs. The VGT engine brake shall activate at a 0% accelerator throttle position when in operation mode.

AUXILIARY ENGINE BRAKE CONTROL

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

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

The variable geometry turbo brake shall be controlled via a virtual button on the Vista display and control screen. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started.

ELECTRONIC ENGINE OIL LEVEL INDICATOR

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

FLUID FILLS

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

ENGINE DRAIN PLUG

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

ENGINE WARRANTY

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

REMOTE THROTTLE HARNESS

An apparatus interface wiring harness for the engine and transmission pump interlocks shall be supplied with the chassis. The harness shall include a connector for connection to a chassis pump panel harness supplied by the body builder and shall terminate in the left frame rail behind the cab for connection by the body builder. The harness shall include circuits deemed for a pump panel and shall contain circuits for a hand throttle, and a multiplexed gauge. Separate circuits shall also be included for a pump control switch, "Pump Engaged" and "OK to Pump" indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, clean power, customer ignition, air horn solenoid switch, high idle switch and high idle indicator light. The harness shall contain interlocks that will prevent shifting to road or pump mode unless the transmission output speed translates to less than 1 mph and the transmission is in neutral. The shift to pump mode shall also require the park brake be set.

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Yes No

ENGINE PROGRAMMING REMOTE THROTTLE

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

ENGINE PROGRAMMING IDLE SPEED

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

ENGINE AIR INTAKE

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

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

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

ENGINE FAN DRIVE

The engine cooling system fan shall incorporate a thermostatically controlled, Horton fully variable type fan drive with SmartClutch J-1939 CAN controller.

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

ENGINE COOLING SYSTEM

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

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

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

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Yes No

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

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

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

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

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

ENGINE COOLING SYSTEM PROTECTION

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

ENGINE COOLANT

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

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

ELECTRONIC COOLANT LEVEL INDICATOR

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

ENGINE PUMP HEAT EXCHANGER

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

COOLANT HOSES

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

ENGINE COOLANT OVERFLOW BOTTLE

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

ENGINE EXHAUST SYSTEM

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

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

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

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

DIESEL EXHAUST FLUID TANK

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

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

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

ENGINE EXHAUST ACCESSORIES

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

ENGINE EXHAUST WRAP

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

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

EMISSIONS SYSTEMS WARRANTY

Purchaser shall receive a Regulated Emissions Systems Five (5) Years or 100,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0140. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

TRANSMISSION

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

The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The transmission gear ratios shall be:

- 1st 3.49:1
- 2nd 1.86:1
- 3rd 1.41:1
- 4th 1.00:1
- 5th 0.75:1
- 6th 0.65:1 (if applicable)
- Rev 5.03:1

TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, will select five (5) speeds of operation. The sixth speed over drive shall be available with the activation of the mode button on the shifting pad.

TRANSMISSION FEATURE PROGRAMMING

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

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

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

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

TRANSMISSION SHIFT SELECTOR

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

ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

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

TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

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

TRANSMISSION COOLING SYSTEM

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

TRANSMISSION DRAIN PLUG

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

TRANSMISSION WARRANTY

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

LH PTO

A PTO shall be installed on the transmission by the OEM.

LH PTO MODEL

A ten (10) bolt Chelsea model 280-GSFJP-B8RK heavy duty transmission driven PTO shall be installed. The clutched shifted PTO is designed specifically for the Allison world transmission and provides an intermittent and continuous torque rating of 265 lb. ft.

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 4:00 o'clock position.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

LH PTO CONTROL

A pre-wire shall be provided for a customer mounted left hand power take off which shall be controlled by the transmission. The power take off shall be activated by a locking on/off rocker switch which contains an integral light which shall illuminate upon a positive engagement of the power take off. This switch shall be located on dash.

Required operating conditions for enabling this function are:

- Throttle position is low
- Engine speed is within customer modifiable constant limits
- Output speed is within customer modifiable constant limits

Park brake set

PTO PROGRAMMING

The power take off shall be programmed for operator control such that it shall only engage at or below 900 RPM and operate in a range up to 4000 RPM. The PTO programming shall provide for automatic disengagement set at a specified engine speed of 4000 RPM which shall protect equipment driven from the power take off.

DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with MSI 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat®. The drivelines shall include Meritor brand u-joints with thrust washers.

MIDSHIP PUMP / GEARBOX

A temporary jackshaft driveline shall be installed by the chassis manufacturer to accommodate the mid-ship split shaft pump as specified by the apparatus manufacturer.

MIDSHIP PUMP / GEARBOX MODEL

The midship pump/gearbox provisions shall be for a Waterous CSUC20 pump.

MIDSHIP PUMP GEARBOX DROP

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

MIDSHIP PUMP RATIO

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

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

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

PUMP SHIFT CONTROLS

One (1) air pump shift control panel shall be located on the left hand side of the engine tunnel, integrated with the shifter pod. The following shall be provided on the panel: a three (3) position control lever; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline and shall include pump instructions. An instruction plate describing the transmission shift selector position used for pumping shall be provided and located so it can be read from the driver's position per NFPA

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

16.10.1.3. The road mode shall be selected when the control lever is in the forward position and pump mode shall be selected when the control lever is in the rearward position.

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

PUMP SHIFT CONTROL PLUMBING

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

FUEL FILTER/WATER SEPARATOR

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

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

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

FUEL LINES

The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

FUEL SHUTOFF VALVE

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

ELECTRIC FUEL PRIMER

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

FUEL TANK

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

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

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

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

FUEL TANK MATERIAL AND FINISH

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

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

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

FUEL TANK STRAP MATERIAL

The fuel tank straps shall be constructed of ASTM A-36 steel. The fuel tank straps shall be powder coated black and then painted to match the frame components if possible.

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.

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.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

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

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

FRONT SUSPENSION

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

STEERING COLUMN/ WHEEL

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

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

ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

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

POWER STEERING PUMP

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

FRONT AXLE CRAMP ANGLE

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

POWER STEERING GEAR

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

CHASSIS ALIGNMENT

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

REAR AXLE

The rear axle shall be a Meritor model RS-35-185 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 35,000 pounds.

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

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

REAR AXLE DIFFERENTIAL LUBRICATION

The rear axle differential shall be lubricated with oil.

REAR WHEEL BEARING LUBRICATION

The rear axle wheel bearings shall be lubricated with oil.

VEHICLE TOP SPEED

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

REAR SUSPENSION

The single rear axle shall feature a Hendrickson Roadmaax™ air suspension. The suspension shall include two optimized air springs mounted to cast structural trailing arms, a transverse cross beam for increased roll stability and two heavy duty shock absorbers. Dual air height control valves shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load. Axle alignment is maintained using two eccentric bushings at each frame bracket.

The rear axle weight of the complete vehicle shall be a minimum of 12,500 pounds unladen.

The rear suspension capacity shall be rated at 35,000 pounds.

REAR SHOCK ABSORBERS

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

TIRE INTERMITTENT SERVICE RATING

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

FRONT TIRE

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

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

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

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

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

REAR TIRE

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

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

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

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

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

REAR AXLE RATIO

The rear axle ratio shall be 5.38:1.

TIRE PRESSURE INDICATOR

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

FRONT WHEEL

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

REAR WHEEL

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

WHEEL TRIM

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats.

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

BRAKE SYSTEM

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

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

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

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

A 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.

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.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

REAR BRAKES

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

PARK BRAKE

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

PARK BRAKE CONTROL

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

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

REAR BRAKE SLACK ADJUSTERS

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

REAR BRAKE DUST SHIELDS

The rear brakes shall be equipped with brake dust shields.

AIR DRYER

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

FRONT BRAKE CHAMBERS

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

REAR BRAKE CHAMBERS

The rear axle shall include a piston style MGM 30/30 long stroke brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn operates the foundational brake mechanism forcing the brake shoes against the brake drum.

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.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

AIR GOVERNOR

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

MOISTURE EJECTORS

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

AIR SUPPLY LINES

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

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

AIR TANK SPACERS

There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 1.50 inches inward towards the center of the chassis. This shall provide clearance between the air tanks and the frame for body U-bolt clearance.

REAR AIR TANK MOUNTING

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

WHEELBASE

The chassis wheelbase shall be TBD.

REAR OVERHANG

The chassis rear overhang shall be TBD.

FRAME

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

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

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

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.

REAR TOW DEVICE

The frame rails shall contain (4) holes per frame in a pattern specified by the OEM for mounting tow eyes at the rear of the frame at a location defined by the OEM.

FRAME PAINT

The frame rails 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

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:

- Steering gear bracket
- Front splayed rails and fish plates
- Bumper extensions
- Cross members
- Cross member gussets
- Fuel tank mounting brackets
- Fuel tank straps (unless material/finish is specified in 3130 subcat)
- Air tanks (unless color coded tanks are specified in 3205 subcat)
- Air tank mounting brackets
- Exhaust mounting brackets
- Air cleaner skid plate
- Radiator skid plate
- Battery supports, battery trays and battery covers

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 mills.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

FRAME ASSEMBLY STRUCTURAL

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

FRAME RAIL CORROSION

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

FRAME COMPONENTS CORROSION

Purchaser shall receive a Frame Components Corrosion (Powder Coat) Three (3) Years or 48,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0313. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.

FRONT BUMPER

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

The bumper shall be primed and painted as specified.

FRONT BUMPER EXTENSION LENGTH

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

FRONT BUMPER PAINT

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

FRONT BUMPER SUCTION PROVISION

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

The front of the suction pipe shall be designed to extend vertically 2.00 inches above the top surface of the bumper in the right hand outboard position.

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

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

FRONT BUMPER APRON

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

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

FRONT BUMPER DISCHARGE

The chassis shall include frame mounted 2.50 inch diameter plumbed pipe intended for use as a discharge trash line. The discharge pipe shall be routed from the left hand front splay rail area behind the bumper to the area rear of the front axle, ahead of the battery box.

The discharge shall pipe shall be a, 2.50 inch stainless steel schedule 10 tube. The discharge shall include a Victaulic groove for connecting to the pump and discharge hose plumbing on each end of the tube.

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

FRONT BUMPER COMPARTMENT CENTER

The front bumper shall include a compartment in the bumper apron located in the center between the frame rails which may be used as a hose well. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape.

MECHANICAL SIREN

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

MECHANICAL SIREN LOCATION

The siren shall be recess mounted on the left side of the front fascia of the bumper approximately in the center of the flat surface between the bumper radius and the frame rail. The siren shall be mounted completely behind the face of the bumper to protect the siren from damage.

AIR HORN

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

AIR HORN LOCATION

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

AIR HORN RESERVOIR

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

ELECTRONIC SIREN SPEAKER

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

ELECTRONIC SIREN SPEAKER LOCATION

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

FRONT BUMPER TOW HOOKS

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

CAB TILT SYSTEM

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission. The cab tilt pump assembly shall be located on the right side of the chassis above the battery box.

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

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

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

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

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

CAB TILT AUXILIARY PUMP

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

CAB TILT LIMIT SWITCH

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

CAB TILT CONTROL RECEPTACLE

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

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

CAB TILT LOCK DOWN INDICATOR

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

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

CAB WINDSHIELD

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

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

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

GLASS FRONT DOOR

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished 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 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.

Each front door window shall include patent pending heated glass technology to reduce fogging with a switch on the dash.

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.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

GLASS REAR DOOR RH

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

GLASS TINT REAR DOOR RIGHT HAND

The window located in the right hand side rear window shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

GLASS REAR DOOR LH

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

GLASS TINT REAR DOOR LEFT HAND

The window located in the left hand side rear door shall include a dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

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 dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

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 dark gray automotive tint which shall allow forty-five percent (45%) light transmittance. The dark tint shall aid in cab cooling and help protect passengers from radiant solar energy.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

CLIMATE CONTROL

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

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

The system shall be capable of producing up to 12 FPM of air velocity at all occupant seating positions. Separate front and rear blower motors shall be of brushless design and shall be controlled independently. It shall be capable of reducing the interior cabin air temperature from 122° F (+/- 3° F) to 80° F in thirty minutes with 50% relative humidity and full solar load as described in SAE J2646.

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

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

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

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

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

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

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

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

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

CLIMATE CONTROL DRAIN

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

FREMONT FIRE DEPARTMENT

Bidder
Complies

Yes

No

CLIMATE CONTROL ACTIVATION

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

HVAC OVERHEAD COVER PAINT

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

A/C CONDENSER LOCATION

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

A/C COMPRESSOR

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

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

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

Refrigerant Compressor displacement: 19.1 cubic inches per revolution.

CAB CIRCULATION FANS FRONT

The cab shall include two (2) all metal 6.00 inch air circulation fans installed in the outer front cab corners. Each fan shall be controlled by an individual toggle switch on each fan. The fans can be used to help defog the windshield or to increase air circulation for passenger comfort.

UNDER CAB INSULATION

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

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

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

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

INTERIOR TRIM FLOOR

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

INTERIOR TRIM

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

REAR WALL INTERIOR TRIM

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

HEADER TRIM

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

TRIM CENTER DASH

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

TRIM LH DASH

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

TRIM RH DASH

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

ENGINE TUNNEL TRIM

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

ENGINE TUNNEL ACCESSORIES

The engine tunnel shall feature a fabricated aluminum console which shall include a large storage bin with dividers and a map compartment. There shall be two (2) cup holders included in the console.

POWER POINT DASH MOUNT

The cab shall include one (1) 12 volt cigarette lighter type receptacles in the switch panel to provide a power source for 12 volt electrical equipment. The cab shall also include two (2) Blue Sea dual universal serial bus (USB) charging receptacles in the cab dash switch panel to provide a power source for USB chargeable electrical equipment. The USB ports shall be capable of a 5 Volt-2.1 amp total output. The receptacles shall be wired battery direct.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

AUXILIARY POWER POINT ENGINE TUNNEL

The cab interior shall include two (2) 12 volt cigarette lighter type receptacles to provide power sources for 12 volt electrical equipment. The receptacles shall be connected directly to the batteries. The receptacles shall be located on the top of the engine tunnel near the rear, one (1) at the left corner and one (1) at the right corner.

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

INTERIOR GRAB HANDLE "A" PILLAR

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

INTERIOR GRAB HANDLE FRONT DOOR

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

INTERIOR GRAB HANDLE REAR DOOR

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

INTERIOR MID COMPARTMENT

The cab shall include a compartment located in the middle of the cab behind the engine tunnel adjacent to the rear facing outboard seating positions. This compartment shall measure the full width of the engine tunnel, full height of the engine tunnel and full depth of the space between the rear facing outer seat location wheel wells as to not protrude in to the walking space of the cab. The compartment shall be accessible from the interior of the cab through an opening in the rear of the compartment. The compartment shall be accessible via a cargo net covered provision that shall include side-release buckle assemblies at the bottom. The interior and exterior of the compartment shall be painted to match the cab interior paint.

INTERIOR MID COMPARTMENT LIGHTING

There shall be one (1) On Scene Solutions brand Night Axe LED strip light installed to illuminate the interior compartment behind the engine tunnel inside the crew area of the cab. The strip light shall be 27.00 inches long. The strip light shall be rocker switch activated. The switch shall be located on the upper compartment face.

INTERIOR SOFT TRIM COLOR

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

INTERIOR TRIM SUNVISOR

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

INTERIOR FLOOR MAT COLOR

The cab interior floor mat shall be gray in color.

CAB PAINT INTERIOR DOOR TRIM

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

HEADER TRIM INTERIOR PAINT

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

TRIM CENTER DASH INTERIOR PAINT

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

TRIM LH DASH INTERIOR PAINT

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

TRIM RIGHT HAND DASH INTERIOR PAINT

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

ENGINE TUNNEL ACCESSORIES PAINT

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

DASH PANEL GROUP

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

SWITCHES CENTER PANEL

The center dash panel shall include six (6) rocker switch positions in a single row configuration in the center 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 three (3) switches. Two (2) of the switches shall be rocker type and the left one (1) shall be the windshield wiper/washer control switch.

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

SWITCHES RIGHT PANEL

The right dash panel shall include three (3) rocker switch positions in a single row configuration.

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

SEAT BELT WARNING

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s).

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 applicable audible alarm shall remain active until all occupied seats have the seat belts fastened.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

SEAT MATERIAL

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

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

SEAT COLOR

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

SEAT BACK LOGO

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

SEAT DRIVER

The driver's seat shall be an H.O. Bostrom 400 Series Sierra model seat with air suspension. The four-way seat shall feature 3.00 inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

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

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

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 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 feature a two (2) way adjustable lumbar support and offer an infinite fully reclining adjustable titling seat back. The seat back shall also feature a contoured head rest.

SEAT MOUNTING DRIVER

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

SEAT OFFICER

The officer's seat shall be an H.O. Bostrom 400 Series Sierra model seat with air suspension. The four-way seat shall feature 3.00 inch vertical travel air suspension and manual fore and aft adjustment with 5.00 inches of travel. The suspension control shall be located on the seat below the left front corner of the bottom cushion. The seat shall also feature integral springs to isolate shock.

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

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

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 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 OFFICER

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

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

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

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

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

SEAT MOUNTING OFFICER

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

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.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

SEAT REAR FACING OUTER LOCATION

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

SEAT CREW REAR FACING OUTER

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom 500 Series Firefighter model seat. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be spring load hinged and compact in design for additional room. The seat shall include a "Fold and Hold" feature so that the cushion shall remain in the seated position and simply touched to flip up.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. 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 REAR FACING OUTER

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

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

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

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

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

SEAT MOUNTING REAR FACING OUTER

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

SEAT FORWARD FACING CENTER LOCATION

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

SEAT CREW FORWARD FACING CENTER

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

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

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

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

SEAT BACK FORWARD FACING CENTER

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

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

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

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

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

SEAT FRAME FORWARD FACING

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

SEAT FRAME FORWARD FACING STORAGE ACCESS

There shall be two (2) access points to the storage area centered on the front of the seat frame. Each access point shall be covered by a hinged door to allow access for storage in the seat box.

SEAT MOUNTING FORWARD FACING CENTER

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

SEAT FRAME EXTERIOR REAR COMPARTMENT ACCESS

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

CAB FRONT UNDERSEAT STORAGE ACCESS

The left and right under seat storage areas shall have a removable vented aluminum cover.

SEAT COMPARTMENT DOOR FINISH

All underseat storage compartment access doors shall have a multi-tone black-black texture finish.

WINDSHIELD WIPER SYSTEM

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

ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

CAB DOOR HARDWARE

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

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

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

DOOR LOCKS

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

DOOR LOCK LH REAR CAB COMPARTMENT

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

DOOR LOCK RH REAR CAB COMPARTMENT

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

GRAB HANDLES

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

LIGHTED GRAB HANDLES

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

REARVIEW MIRRORS

Retrac Aerodynamic West Coast style single vision mirror heads model 613275 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 8.00 inch convex mirrors with a stainless steel back, model 980-4, installed below the flat glass to provide a wider field of vision. The flat mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The convex mirrors shall be manually adjustable. The flat mirror glass 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.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

REARVIEW MIRROR HEAT SWITCH

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

CAB FENDER

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

MUD FLAPS FRONT

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

CAB EXTERIOR FRONT & SIDE EMBLEMS

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

IGNITION

A master battery system with a keyless start ignition system shall be provided. 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

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

BATTERY CABLE

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

BATTERY JUMPER STUD

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

ALTERNATOR

The charging system shall include a 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.

STARTER MOTOR

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

BATTERY CONDITIONER

A Kussmaul Auto Charge 40 LPC battery conditioner shall be supplied. The battery conditioner shall provide a 40 amp output for the chassis batteries and a 15 amp output circuit for accessory loads. The battery conditioner shall be mounted in the cab behind the driver's seat.

BATTERY CONDITIONER DISPLAY

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

AUXILIARY AIR COMPRESSOR

A Kussmaul Auto Pump 120V air compressor shall be supplied. The air compressor shall be installed behind the officer's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

ELECTRICAL INLET LOCATION

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

ELECTRICAL INLET

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

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

Amp Draw Reference List:

- Kussmaul 40 LPC Charger - 5 Amps*
- Kussmaul 40/20 Charger - 8.5 Amps*
- Kussmaul 80 LPC Charger - 13 Amps*
- Kussmaul EV-40 - 6.2 Amps*
- Blue Sea P12 7532 - 7.5 Amps*
- Iota DLS-45/IQ4 - 11 Amps*
- 1000W Engine Heater - 8.33 Amps*

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

*1500W Engine Heater - 12.5 Amps
120V Air Compressor - 4.2 Amps
120V Dometic HVAC - 15 Amps*

ELECTRICAL INLET CONNECTION

The electrical inlet shall be connected to the battery conditioner and the air pump.

ELECTRICAL INLET COLOR

The electrical inlet connection shall include a black cover.

HEADLIGHTS

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

HEADLIGHT LOCATION

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

FRONT TURN SIGNALS

The front fascia shall include two (2) Whelen model M6 4.00 inch X 6.00 inch amber LED turn signals which shall be installed in an outboard position within the front fascia black bezel.

SIDE TURN/MARKER LIGHTS

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

MARKER AND ICC LIGHTS

In accordance with FMVSS, there shall be five (5) Tecniq S170 LED cab marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level. The lights shall be amber with black bezels.

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. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights when the ignition switch is in the "On" position and the parking brake is released.

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.

INTERIOR OVERHEAD LIGHTS

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

INTERIOR OVERHEAD LIGHTS ACTIVATION

The clear portion of each lamp shall be activated by opening the respective door and via the multiplex display.

LIGHTBAR PROVISION

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

CAB FRONT LIGHTBAR MODEL

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

See the light bar layout for specific details. 7 red rota-beams / 2 white LED / 2 red LED



FRONT SCENE LIGHTS

The front of the cab shall include a Whelen Pioneer model PFH2 contour roof mount scene light installed on the brow of the cab.

Each 150 watt lamp head shall incorporate a 12 volt DC Super-LED 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 PFH2 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 17,750 lumens total. Each lamp head shall measure 4.25 inches in height X 14.00 inches in width. The lamp heads and brackets shall be powder coated black.

FRONT SCENE LIGHT LOCATION

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

FRONT SCENE LIGHTS ACTIVATION

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

SIDE SCENE LIGHTS

The cab shall include two (2) Whelen Pioneer model PCPSM1B LED surface mount lights installed one (1) on each side of the cab.

The PCPSM1B 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 housing shall be painted black.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

SIDE SCENE LIGHT LOCATION

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

SIDE SCENE ACTIVATION

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

GROUND LIGHTS

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

GROUND LIGHTS

The ground lighting shall be activated when the parking brake is set, by the opening of the door on the respective cab side, and 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 Tecniq T44 LED light which shall activate with the opening of the respective door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life.

INTERMEDIATE STEP LIGHTS

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

LIGHT TOWER PROVISION

The cab roof shall include reinforcement for a light tower. The reinforcement shall consist of four (4) aluminum pads mounted to the exterior of the cab roof and additional internal cab roof structure. The entire reinforcement shall be integral with the roof for rigidity. The light tower shall be provided and installed by the body manufacturer.

LIGHT TOWER MODEL

The light tower provisions shall be for a Will-Burt Nightscan model 4.5 (NS-15) light tower with six (6) 120 volt 750 watt quartz-halogen ROM Magnafire light heads.

LIGHT TOWER ORIENTATION

The roof reinforcement shall be installed parallel to the rear wall of the cab.

LIGHT TOWER HORIZONTAL JUSTIFICATION

The roof reinforcement shall be justified to the center of the cab left to right.

LIGHT TOWER LIGHT HEAD ORIENTATION

The roof reinforcement shall be oriented in order for the light head on the light tower to be to the left side while in the stored position.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

LIGHT TOWER FORE/AFT ORIENTATION

The roof reinforcement shall be oriented on the roof of the cab towards the rear wall of the cab.

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.

DO NOT MOVE APPARATUS LIGHT

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

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

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

MASTER WARNING SWITCH

A master switch shall be included, 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 black bezel

INBOARD FRONT WARNING LIGHTS COLOR

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

FRONT WARNING SWITCH

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

INTERSECTION WARNING LIGHTS

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

INTERSECTION WARNING LIGHTS COLOR

The intersection lights shall be red.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

INTERSECTION WARNING LIGHTS LOCATION

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

SIDE WARNING LIGHTS

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

SIDE WARNING LIGHTS COLOR

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

SIDE WARNING LIGHTS LOCATION

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

SIDE AND INTERSECTION WARNING SWITCH

The side warning lights shall be controlled through 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) FRC MaxVision surface mount water level light strips.

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.

TANK LEVEL LIGHTS ACTIVATION

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

TANK LEVEL LIGHTS LOCATION

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

REAR WARNING LIGHTS

The cab shall be prewired and contain a cutout for a Whelen TACTL5 Traffic Advisor control head to be installed by the body builder. The prewire shall be coiled under the center dash panel.

Wiring provisions shall be provided routed to the rear of the frame for OEM installation of up to eight (8) individual traffic advisor warning lights rated at no more than one (1) amp each.

The power to the control head shall be ignition switched and activation dependent upon the state of the controllers switched position upon ignition.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

ROTO-RAYS WARNING LIGHT

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

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

ROTO-RAYS WARNING LIGHT SWITCH

The Roto-Rays® front warning light(s) shall be separately controlled through a virtual button on the Vista display and control screen. When the parking brake is engaged the light shall stop rotating.

MARS WARNING LIGHTS

The cab front shall include two (2) Mars 888 model TB8-L1-P/R LED warning lights featuring a gimbal mounted oscillating lamp.

The stainless steel light heads shall be 7.00 inches in diameter and shall generate a “figure eight” pattern which is clearly visible even in adverse conditions. The lights shall be pedestal mounted one (1) each side on the cab corner on a polished stainless steel bracket.

The lenses shall be red in color.

MARS WARNING LIGHT SWITCH

The Mars front warning light(s) shall be separately controlled through a virtual button on the Vista display and control panel.

SIREN CONTROL HEAD

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

STEERING WHEEL HORN BUTTON SELECTOR SWITCH

A virtual button on the Vista display and control screen shall be provided 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 AUXILIARY ACTIVATION

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

MECHANICAL SIREN BRAKE/AUXILIARY ACTIVATION

The mechanical siren shall be actuated by a momentary rocker switch in the switch panel on the dash. A red momentary siren brake rocker switch shall be provided in the switch panel on the dash. A virtual button for the siren brake shall be provided on the Vista display.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

MECHANICAL SIREN INTERLOCK

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

BACK-UP ALARM

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

INSTRUMENTATION

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

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

The instrument panel shall contain the following gauges:

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

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

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

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

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

RED INDICATORS

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

AMBER INDICATORS

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

GREEN INDICATORS

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

BLUE INDICATORS

- High Beam indicator

AUDIBLE ALARMS

- Air Filter Restriction
- Cab Tilt Lock
- Check Engine
- Check Transmission
- Open Door/Compartment
- High Coolant Temperature
- High or Low System Voltage
- High Transmission Temperature
- Low Air Pressure
- Low Coolant Level
- Low DEF Level
- Low Engine Oil Pressure
- Low Fuel
- Seatbelt Indicator
- Stop Engine
- Water in Fuel
- Extended Left/Right Turn Signal On
- ABS System Fault

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

BACKLIGHTING COLOR

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

CAMERA REAR

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

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

CAMERA DISPLAY

The camera system shall be wired to a single Weldon Vista display located on the driver's side dash. The camera system display can be activated through the Vista display panel.

CAMERA SPEAKER

The rear camera shall be wired to speaker(s) in the cab and shall audible to the driver and officer. There shall be a virtual button provided on the Vista display and control panel to deactivate the speaker(s).

COMMUNICATION ANTENNA

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

COMMUNICATION ANTENNA CABLE ROUTING

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

AUXILIARY COMMUNICATION ANTENNA

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

AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING

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

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.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

FIRE EXTINGUISHER

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

ROAD SAFETY KIT

The cab and chassis shall include one (1) emergency road safety triangle kit.

DOOR KEYS

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

WARRANTY

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

CHASSIS OPERATION MANUAL

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

ENGINE AND TRANSMISSION OPERATION MANUALS

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

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

CAB/CHASSIS AS BUILT WIRING DIAGRAMS

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

PAINT CONFIRMATION

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

DRIVELINE LAYOUT CONFIRMATION

During the design phase of the chassis the Spartan Chassis driveline engineer shall submit the driveline layout to an OEM engineer to review the chassis design for any potential problems integrating the OEM body to the chassis. The OEM engineer shall provide approval to the driveline engineer prior to driveline bills of materials being released.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes

No

EXHAUST MODIFICATION

The chassis exhaust pipe and muffler shall be extended to the front of the right rear wheel and shall be pointed out. Any heat shields required to protect body and/or compartments from heat shall be installed.

CHASSIS SETUP

The chassis shall have adjustments made to ensure the proper configuration for accepting pumps and/or bodies. This shall include the repositioning air tanks, frame cross members and miscellaneous adjustments.

FRONT CENTER BUMPER COMPARTMENT COVER

There shall be a cover constructed of Hypalon material that is fixed on one end and secured by bungee connectors on the other end to retain hose in the bumper compartment per NFPA requirements.

GLOVE BOX STORAGE

A storage box designed to fit two (2) boxes of gloves shall be supplied and mounted on the rear of the console or engine tunnel.

REAR TOW EYES

There shall be two (2) rear tow eyes below the body that will be attached to the rear of the chassis frame.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

PUMP OPERATOR'S PANEL - SIDE MOUNT

The operator's control panel shall be located on the left side of the apparatus. The upper portion of the panel will include the engine function and auxiliary gauges, gauge test panel, pump governor, discharge gauges for secondary discharge lines. It will be hinged to swing open, held at the end with appropriate fasteners.

The center portion of the panel will serve as a structural member and a guide for auxiliary discharge line controls.

The lower portion of the left panel will include all side discharge ports, gauges and drains, pony suction and main suction inlets, primer control and tank to pump lines.

The upper portion of the right pump panel will be a hinged door with an appropriate latch mechanism. This will allow for easy service access to the pump, primer oil reservoir and plumbing.

The lower portion of the right panel will include the right discharges, pony suction (if applicable) and the main suction inlet for the pump.

The valve control levers shall be of the horizontally operated locking type. Each lever shall have a chrome T-handle. The valve control levers shall be located directly adjacent to one another and mounted in line as to be in the same position when shut off. Each valve control lever shall be connected directly to its respective valve by a rod to form a "direct linkage" control system. The specified pressure gauges shall be located adjacent to their respective discharge control levers. Each control shall be clearly marked by **color-coded** name plates permanently affixed to the operator's panel.

PUMP PANEL LAYOUT

All discharge valves, 1-1/2" and larger controlled at the operator's control panel shall have corresponding pressure gauges. Gauges shall be 2-1/2" in diameter, 0-400 PSI graduated, silicone filled.

The apparatus body and pump panel modules shall be constructed as independent structures to allow body flexing and to prevent fatigue from normal chassis movement. There shall be a 1" wide gasket installed between the body and the pump panel module.

The front of the pump module shall be enclosed with aluminum diamond plate.

PUMP PANELS AND DOORS

The pump panels and pump access doors shall be constructed of brushed stainless steel.

SIDE MOUNT FIRE PUMP MODULE INSTALLATION

The fire pump, pump assembly, plumbing, intakes, outlets, and accessories shall be installed on the chassis.

LEFT PUMP PANEL LIGHT

The left pump panel shall be lit with LED strip lighting. Each strip light shall be mounted under a formed light shield. The lights will be controlled by the parking brake switch.

RIGHT PUMP PANEL LIGHT

The right pump panel shall be lit with LED strip lighting. Each strip light shall be mounted under a formed light shield. The lights will be controlled by the parking brake switch.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

COLOR CODED PUMP PANEL

All valve controls, discharges and drains shall be labeled and color coded to the customer's specifications.

SINGLE STAGE FIRE PUMP

A Waterous Model CSU fire pump shall be midship mounted, single stage centrifugal type. In addition to meeting NFPA 1901 requirements, it shall be constructed and mounted in accordance with the following specifications.

Fire pump shall incorporate high strength involute tooth form Morse HV chain drive transmission. Benefits of the chain drive include quiet, noiseless operation at high shaft speeds, and improved power-transmitting capabilities due to the fact that the chain wraps itself halfway around the gear distributing a very uniform pattern of tooth engagement. Pump transmissions utilizing spur or helical drive gears that create high noise levels at elevated speeds and only permit minimal tooth to tooth engagement are not acceptable.

The shift engagement shall be accomplished by a free sliding collar and shall incorporate an internal locking mechanism to insure that collar will be maintained in ROAD or PUMP operation.

Suction intake arms shall be provided with removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

At time of delivery the pump shall be tested and rated as follows:

- 100% of rated capacity at 150 pounds net pressure
- 70% of rated capacity at 200 pounds net pressure
- 50% of rated capacity at 250 pounds net pressure
- 100% of rated capacity at 165 pounds net pressure

Impeller hubs shall be "Flame Plated", impregnated with tungsten carbide to assure maximum pump life and efficiency despite the presence of abrasive particles, such as fine sand, in the water being pumped.

The impeller shaft shall be of a "separable" design to allow true separation of the transmission from the pump without disassembly or disturbing either component. Fire pumps requiring disassembly of pump body and transmission to service either component are not acceptable.

The main pump body shall be horizontally split and shall be in two sections for easy removal of the entire impeller assembly including wear rings, without disturbing setting of the pump on the chassis. Pump case halves shall be bolted together on a single horizontal plane using a single gasket.

The pump body is to be of close grain gray iron with all moving parts which come into contact with water to be of bronze or stainless steel.

The pump must be tested by the pump manufacturer for 10 minutes hydrostatically at a pressure of 500 PSIG. Certification by the pump manufacturer must be provided.

The pump shall be provided with a plate giving the rated flow at "capacity" and "pressure" test pressures, together with the R.P.M. of the engine at those pressures and deliveries and mounted in clear view of the pump operators panel. Data plate shall include model and serial numbers of the pump body and chain transmission, hydro and discharge test pressures, and the date of pump and transmission manufacture.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

FIRE PUMP WARRANTY - SEVEN YEARS

The fire pump shall carry the pump manufacturer's seven (7) year warranty covering defective parts and workmanship. A copy of the pump manufacturer's warranty policy shall be provided with the completed apparatus.

MECHANICAL SEAL

The pump shall include a mechanical seal.

AKRON VALVES

All suction and discharge valves, including tank to pump lines, will be AKRON brand.

U. L. TEST PLUGS

Two U. L. test plugs shall be pump panel mounted for UL testing of vacuum and pressures.

U. L. TEST - 1500 GPM

The pump will meet and perform the following test to receive a U. L. certification.

- 100% of rated capacity at 150 PSI net pump pressure.
- 100% of rated capacity at 165 PSI net pump pressure.
- 75% of rated capacity at 200 PSI net pump pressure.
- 50% of rated capacity at 250 PSI net pump pressure.

PUMP ANODES

Three (3) sacrificial anodes shall be installed in the pump as follows:

- Intake manifold - two (2)
- Discharge manifold - one (1)

The anodes shall be drilled to indicate that they should be replaced when they leak.

FIRE PUMP MULTI-LOCATION PRIMING SYSTEM – TWO LOCATION

A Trident Model #31.001.11 multi-location air operated priming system shall be installed. The unit shall be of all brass and stainless steel construction and designed for fire pumps of 1,250 GPM (4,690 LPM) or more. Due to corrosion exposure no aluminum or vanes shall be used in the primer design. The primer shall be three-barrel design with 3/4" NPT connection to the fire pump.

The primer shall be mounted above the pump impeller so that the priming line will automatically drain back to the pump. The primer shall also automatically drain when the panel control actuator is not in operation. The inlet side of the primer shall include a brass 'wye' type strainer with removable stainless steel fine mesh strainer to prevent entry of debris into the primer body.

Performance, Safety, and NFPA Compliance

The priming system shall be capable to a vertical lift to 22 inches of mercury and shall be fully compliant to applicable NFPA standards for vertical lift. The system shall create vacuum by using air from the chassis air brake system through a three-barrel multi-stage internal "venturi nozzles" within the primer body. The noise level during operation of the primer shall not exceed 75 Db.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

Air Flow Requirements

The primer shall require a minimum of 15.6 cubic foot per minute air compressor and shall be capable of meeting drafting requirements at high idle engine speed. The air supply shall be from a chassis supplied 'protected' air storage tank with a pressure protection valve. The air supply line shall have a pressure protection valve set between 70 to 80 PSIG.

Primer Controls

The pump primer control shall have a manually operated, panel mounted "push to prime" air valve; which will direct air pressure from the air brake storage tank to the primer body. To prevent freezing, no water shall flow to and from the panel control.

One (1) additional "push to prime" remote primer control shall be installed on the panel for the specified additional intake. The additional control shall operate the air primer to pre-prime and may be used to remove air from the auxiliary intake piping and hose, while the fire pump is operating.

Power Requirements

To reduce the electrical power requirements on the fire apparatus the priming system shall be air powered. The system shall not require annual tear-down and maintenance, an electric motor or solenoid, electrical wiring, lubrication, belt drive, or clutch assembly.

Warranty

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

ENGINE COOLER

An engine cooler shall be installed inline with the discharge side of the pump. Coolant inlet and outlet shall be continuous, preventing intermixing of engine coolant and pump water.

PUMP COOLER

A pump cooler recirculating line and valve shall be installed. It shall be connected to the discharge side of pump to a valve located on pump panel and back to inlet side of pump.

PUMP HEAT PAN

There shall be one (1) removable heat pan installed under the pump. The pan shall be made from aluminum sheet.

PUMPHOUSE HEATER

A pump house 25,000 BTU heater will be installed behind the pump panel. It will provide warm air flow via forced air, fed from the vehicle cooling system. A fan motor will be installed, switched from the pump panel.

Two valves will be provided in the lines to allow the system to be shut off during warm weather operations.

EVACUATION HORN

There shall be an air horn switch installed on the pump panel that shall activate the chassis air horns.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

PUMP SHIFT

A power shift shall be installed in a convenient location to engage fire pump. Two indicator lights located next to the pump shift controls shall be installed. One shall indicate that the pump shift has been successfully completed. The other will indicate that the pump is engaged, the chassis transmission is in pump gear, and the parking brake is engaged.

A "Throttle Ready" indicator light shall be provided at the pump operator's panel that indicates the apparatus is in "OK to Pump" mode.

PUMP SHIFT INDICATOR

A green light to indicate that the pump is in gear shall be mounted on the cab dash and on the pump panel.

PUMP GOVERNOR

Fire Research InControl pressure governor and monitoring display kit shall be installed. The kit shall include a control panel, intake pressure sensor, discharge pressure sensor, buzzer, and cables. The control panel case shall be waterproof and have dimensions not to exceed 4 3/4" high by 9 3/4" wide by 2 3/4" deep. The panel shall have LEDs to indicate PSI mode, RPM mode, OK TO PUMP, and IDLE RPM.

The following continuous displays shall be provided:

- Pump discharge; shown with four daylight bright LED digits more than 1/2" high
- Pump Intake; shown with four daylight bright LED digits more than 1/2" high
- PSI/RPM setting; shown on an LED bar graph display
- Engine RPM; shown with four daylight bright LED digits more than 1/2" high, updated in 10 RPM increments
- Oil pressure; shown on an LED bar graph display
- Engine coolant temperature; shown on an LED bar graph display
- Battery voltage; shown on an LED bar graph display.

Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 psi. The intake pressure display shall show pressures from -30 in. Hg to 600 psi.

There shall be two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between pressure and RPM modes. When the pump engaged interlock signal is recognized an OK TO PUMP LED will light to indicate throttle ready and the governor shall be in pressure mode with the engine RPM set to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi.

The program features shall be accessed via push buttons located on the front of the control panel. The program shall support manual control of pump discharge pressure and RPM settings, field programmable presets, and diagnostic capabilities. Safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

STAINLESS PLUMBING

All plumbing shall be either stainless steel or high pressure hose with crimped stainless steel fittings. Any manifolds shall be stainless steel. All valves shall be bronze or stainless steel unless other specified.

STAINLESS PLUMBING WARRANTY - TEN YEARS

The manufacturer warrants to the original purchaser all stainless steel plumbing components installed by them and used in the construction of the apparatus water / foam plumbing systems against defects in workmanship and materials for a period of ten (10) years from delivery.

TANK TO PUMP (2)

Two (2) 4" full flow valves shall be installed between the tank and pump suction. The valves shall be electrically operated with the control mounted on the pump panel.

MASTER PUMP DRAIN

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

LINE DRAINS

All suction and discharge lines (1-1/2" and larger) shall have a lever action quarter turn drain valve installed. Each drain valve shall be arranged adjacent to the valve or in a convenient location on the left and/or right pump panel. Remote drain lines will be clearly marked with color coded tags.

INTAKE RELIEF VALVE

A stainless steel suction relief valve will be installed on the suction port of the main fire pump. The valve will be adjustable from 75-250 PSI. The valve will terminate at a 2-1/2" NST-M flange; a cap will be available for emergency use.

PUMP TO TANK LINE

There shall be a 2" pump to tank fill line installed with a 2" inline valve. The valve shall be controlled from the pump panel.

2-1/2" FRONT JUMP LINE

There shall be a 2-1/2" jump line installed with a 2-1/2" inline valve. The valve shall be controlled at the pump panel. The rigid piping will be stainless steel with flexible high pressure hydraulic hose lines using stainless steel fittings. There will be a 2-1/2" swivel elbow with 2-1/2" NST threads.

JUMLINE SWIVEL

The front jumpline swivel will be installed on the gravelshield on the driver side adjacent to the hosewell.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

FRONT SUCTION PLUMBING

There shall be a 5" front suction that will mount vertically through the front bumper extension and then turn 90 degrees forward supplied with the chassis. The suction shall use 5" stainless steel pipe and shall extend from the right front bumper to the right suction side of pump. The suction will be controlled by an electrically actuated butterfly valve with a built in relief valve and air bleeder. The valve control shall be located on pump panel.

A manual override shall be located at the valve.

FRONT SUCTION SWIVEL

There shall be a 6" 90-degree chrome front suction swivel that is connected to the front suction plumbing. The swivel shall rotate 180 degrees and will extend above the front bumper.

A 6" NST long handle chrome cap shall be included.

FRONT SUCTION DRAIN

There shall be a 1/4 turn drain valve for the front suction that will be controlled at the lowest point of the suction pipe.

6" STEAMER INLETS (2)

Two (2) 6" steamer inlets will be provided, one (1) left side and one (1) on right side.

Both shall have chrome caps with long handles.

MONARCH INTAKE VALVE - ELECTRIC

A Waterous Monarch intake valve shall be installed on the left side steamer inlet on the fire pump. The valve shall be a 6" butterfly valve with an electric control mounted on the pump panel. The valve shall be equipped with an adjustable intake relief valve and air bleeder. The entire assembly shall be mounted behind the side pump panel.

MONARCH INTAKE VALVE - ELECTRIC

A Waterous Monarch intake valve shall be installed on the right side steamer inlet on the fire pump. The valve shall be a 6" butterfly valve with an electric control mounted on the pump panel. The valve shall be equipped with an adjustable intake relief valve and air bleeder. The entire assembly shall be mounted behind the side pump panel.

LEFT 2-1/2" SUCTION INTAKE

A 2-1/2" ball-type suction valve shall be installed on the left side pump panel with the valve body mounted behind the pump panel. The control shall be a fixed pivot design, with the handle located along side the suction valve.

The suction valve shall come equipped with a chrome plug, chain, brass inlet strainer and a 2-1/2" NST chrome inlet swivel.

LEFT 2-1/2" DISCHARGES (2)

Two (2) 2-1/2" discharge shall be located on the left side pump panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures, and operated from the panel. The threads on the valve shall be 2-1/2" NST. The discharge shall come equipped with a 3/4" drain valve.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

DISCHARGE ADAPTER

A chrome elbow, cap and chain shall be supplied with the discharge(s).

RIGHT 2-1/2" DISCHARGE (1)

One (1) 2-1/2" discharge shall be located on the right side pump panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures, and operated from the panel. The threads on the valve shall be 2-1/2" NST. The discharge shall come equipped with a 3/4" drain valve.

DISCHARGE ADAPTER

A chrome elbow, cap and chain shall be supplied with the discharge(s).

3" RIGHT LD DISCHARGE

A 3" discharge shall be located on the right side pump panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures, and operated from the pump panel. The threads on the valve shall be 3" NST. The discharge shall come equipped with a 3/4" drain valve.

DISCHARGE ELBOW AND ADAPTERS

The following elbow and adapters shall be supplied for the discharge(s):

- 3" NH-F x 5" storz elbow
- 5" storz x 2-1/2" NHM reducer adapter
- 2-1/2" cap w/ chain

SLO-CLOSE VALVES

A SLO-CLOSE feature will be installed on all valves over 2-1/2" in size as directed by NFPA. These valves will allow full open and close functions without water hammer.

DECK GUN DISCHARGE - 3"

There shall be a 3" deck gun discharge pipe installed above the pump compartment. The discharge shall be controlled by a 3" inline valve. The valve shall be a quarter turn ball type of fixed pivot design and constructed of bronze. The discharge control handle shall be a handle type located on the pump panel. The discharge shall terminate with a 4-bolt flange.

SLO-CLOSE VALVES

A SLO-CLOSE feature will be installed on all valves over 2-1/2" in size as directed by NFPA. These valves will allow full open and close functions without water hammer.

SAFE-TAK PORTABLE MONITOR AND EXTEND-A-GUN PACKAGE

Task Force Tips Crossfire model # XFC-62 portable lightweight monitor package consisting of monitor top, Safe-Tak portable ground base, stacked tips, stream straightener, Master Stream 1000 or 1250 series nozzle, and base storage bracket, Extend-A-Gun and installation bracket set shall be supplied.

Task Force Tips Crossfire, model portable monitor top shall be provided. This top only portion with quick release swivel joint shall be designed for use on truck mounted risers and TFT Safe-Tak 1250 series portable bases. The monitor shall include safety devices that include a locking button which

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

locks the quick release lever when monitor is pressurized, and a 1/4 turn rotational lever lock that secures the horizontal rotation and provides a visual indication that the monitor rotation is locked. For corrosion resistance the monitor shall be constructed from hardcoat anodized aluminum with a red powder coat interior and exterior finish.

The monitor shall have a 3-1/4" waterway for delivery of up to 1250 GPM with low friction loss. Vertical elevation shall be controlled through use of a handwheel controlled stainless steel worm gear which allows full travel to the safety stop point of 35 degrees above horizontal with seven rotations of the wheel. When positioned on a truck mounted riser the monitor shall be able to be used below the 35 degree stop point through release of the spring loaded safety pin.

An automatic drain to remove remaining water and avoid freezing shall be included. Integral stainless steel stream straightener and pressure gauge shall be included.

Task Force Tips Safe-Tak 1250, portable monitor base shall be provided. The monitor base shall include a Safe-Tak, spring loaded butterfly valve designed to rapidly reduce the water flow by 90 percent in the event that contact with the ground is lost. The device shall include an integral carrying handle, four folding stainless steel legs with replaceable tungsten carbide spikes and an anchoring strap attached to a protective cap designed to be stored inside the waterway. The butterfly valve shall have a reset handle located near the inlet to allow the water flow to be reestablished once the base is properly stabilized.

The base shall be constructed from hardcoat anodized aluminum and have a red powder coat interior and exterior finish. The base shall have either a single inlet or a dual hose inlet with clapper valve. A storage bracket for the portable base shall be included.

Task Force Tips Master Stream series nozzle shall be provided. The nozzle shall be designed for use on monitors, ladder pipes, deluge guns and aerial platforms. For corrosion resistance the nozzle shall be constructed for lightweight hardcoat anodized aluminum.

The nozzle shall have a UV resistant rubber bumper with integral teeth designed to produce a finger free fog pattern shall be included. A halo ring shall be included to assist with stream shape control. The nozzle shall be suitable for foam solution application and designed to accept the Task Force Tips FJ-LX-M low expansion air aspirating attachment. The nozzle shall be configured with a female swivel rocker lug coupling.

Task Force Tips smooth bore stacked tip set shall be provided. For corrosion resistance the tip set shall be constructed from hardcoat anodized aluminum alloy. The set shall consist of four (4) tips with the base tip having a 2-1/2" female NH swivel inlet and 2" outlet. The other tip sizes shall be 1-3/4", 1-1/2" and 1-3/8". Each tip shall be laser engraved with a flow/pressure chart, orifice size, and thread size.

Task Force Tips stream straightener shall be supplied. The straightener shall be constructed from extruded aluminum with internal vanes designed to reduce turbulence and increase the reach of smooth bore water streams. The device shall have 2-1/2" female NH rigid inlet and 2-1/2" male NH rigid outlet.

Task Force Tips manually telescoping waterway shall be installed. The waterway shall be capable of being lowered to deck level (or into a monitor well) for storage and transportation and shall be capable of being raised to an extended height by lifting a quick release latch located at the base of the extension tube. This latching device shall be capable of locking the waterway in either the raised or lowered position while maintaining the ability to horizontally rotate the monitor device 360 degrees.

A sensor shall be located on the waterway that signals a 12 volt indicator light installed in the cab to illuminate to indicate that the monitor is raised.

The aluminum riser shall have a 3" waterway; hardcoat anodized finish and be furnished with a 3" inlet

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

and a Task Force Tips Crossfire coupling outlet.

Task Force Tips bracket set shall be installed. The set shall be designed to securely mount the Extend-A-Gun telescoping waterway. The components shall be covered by a five-year warranty.

2-1/2" CROSSLAY HOSEBED - REDUCED TO 1-1/2"

One (1) 2-1/2" crosslay shall be installed on top of the pump house. The crosslay shall hold 200' of 1-3/4" double jacket fire hose. A 2-1/2" mechanical swivel hose connector shall be used in the crosslay to provide access of hose in either direction.

The crosslay shall have one 2-1/2" valve and shall be controlled with a 1/4 turn locking handle mounted on the pump panel.

A 2-1/2" x 1-1/2" adapter shall be supplied and installed on the crosslay swivel.

CROSSLAY HOSEBED COVER

There shall be an aluminum cover for the crosslays. The cover shall be constructed of 1/8" aluminum tread plate and be hinged with a stainless steel knuckle hinge. The cover shall open from the front of the body and swing up to the rear of the body.

CROSSLAY FLAPS

Side flaps for crosslays constructed of 22 ounce hypalon shall be installed to retain hose in the pre-connected beds per NFPA requirements.

Color: Black

2-1/2" CROSSLAY HOSEBED (2)

Two (2) 2-1/2" crosslays shall be installed on top of the pump house. Each crosslay shall hold 200' of 2-1/2" double jacket fire hose. A 2-1/2" mechanical swivel hose connector shall be used in each crosslay to provide access of hose in either direction.

Each crosslay shall have one 2-1/2" valve and shall be controlled with a 1/4 turn locking handle mounted on the pump panel.

CROSSLAY HOSEBED COVER

There shall be an aluminum cover for the crosslays. The cover shall be constructed of 1/8" aluminum tread plate and be hinged with a stainless steel knuckle hinge. The cover shall open from the front of the body and swing up to the rear of the body.

CROSSLAY FLAPS

Side flaps for crosslays constructed of 22 ounce hypalon shall be installed to retain hose in the pre-connected beds per NFPA requirements.

Color: Black

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

BOOSTER REEL PLUMBING

There shall be a 1-1/2" inline valve installed between the pump and the booster reel. The valve shall be controlled from the pump panel. A 1-1/2" flexible high pressure hose shall be installed between the valve and hose reel.

BOOSTER REEL

A Hannay booster reel with painted disc shall be installed as directed. The reel shall be constructed utilizing a welded base. The rewind will be a 12-volt electric motor and will chain drive the reel drum. The booster reel shall have an automatic brake to prevent the booster hose from unwinding . Reel shall have a capacity for **100'** of **3/4"** booster hose. A fully shielded, rewind switch shall be provided in a convenient location as directed. A gear driven manual rewind shall be included. The booster reel discharge control shall be located at the operator's control panel.

Location: Pump module with fairlead out upper passenger pump panel door

BOOSTER REELROLLERS / GUIDES

A set of stainless steel rollers with guides shall be furnished for the booster reel(s) as directed by the customer.

BOOSTER REEL BLOWOUT VALVE

An air blow out valve shall be supplied and installed for the booster reel(s).

BOOSTER HOSE

There shall be one (1) length(s) of 3/4" x 100' non collapsing hose with 1" NST couplings supplied. The hose shall be Niedner Reeltex.

NOZZLE WITH SHUTOFF

one (1) Task Force Tips model # DS1040P ball shut off nozzle(s) shall be provided. The selectable, dual gallonage nozzle shall be furnished with flow settings of 10 and 40 GPM at 100 PSI and produce fog and straight stream patterns. The nozzle body shall be constructed from hardcoat anodized aluminum alloy, utilize a stainless steel ball shut off valve with a quick change polymer valve seat. An integral pistol grip handle shall be positioned directly below the valve handle. This nozzle shall have a "twist off" position for positive shut off. The nozzle shall be furnished with a 1" female NH swivel rocker lug inlet and designed to accept the Task Force Tips FJ-MX-D FoamJet foam aspirating attachment.

2-1/2" HOSEBED PRECONNECTS (4) - ELECTRIC

Four (4) 2-1/2" discharges shall be provided using a 2-1/2" stainless steel pipe terminating at the front of the hose bed. A 2-1/2" NST male adapter shall be supplied on the end of each pipe. The valves shall be electrically operated with the controls mounted on the pump panel. The discharges shall have a 3/4" drain valve.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

TANKER DUMP - NEWTON REAR

There shall be one (1) 10" x 10" stainless Newton dump valve with a electric actuated valve, installed at the rear of the apparatus. The dump valve will be mounted in the center of the rear of the body.

The end of the dump shall be approximately flush with the edge of the rear bumper.

DUMP VALVE FLANGE

A dump valve flange and sump shall be installed in the water tank. The sump shall bring the center of the dump valve below the bottom of the tank thereby increasing the flow rate.

CHUTE - NEWTON DUMP REAR- ELECTRIC

An 18" stainless steel dump chute electric telescoping extension will be provided for the Newton dump valve. The chute will telescope on the main valve, allowing the device to be housed completely inside the apparatus body lines when not in use.

REAR DUMP/CHUTE SWITCHING

The rear dump valve and chute shall include a switch in the cab and one (1) on the rear of the body, driver side. The valve and chute shall be switched together and operated by a single switch.

TANKER DUMPS - NEWTON SIDE

There shall be two (2) Newton 10" x 10" stainless dump valves provided and mounted, one (1) each side of the apparatus. The valves shall be approximately flush with the edge of the apparatus in the closed position.

Each valve shall be electric actuated and have an 18" electric actuated auto chute.

SIDE DUMP VALVE LOCATIONS

The side dump valves shall be located forward of the rear axle.

DUMP VALVE FLANGE

A dump valve flange and sump shall be installed in the water tank. The sump shall bring the center of the dump valve below the bottom of the tank thereby increasing the flow rate.

SIDE DUMP/CHUTE SWITCHING

The side dump valves and chutes shall include switches in the cab and on the rear of the body. The driver side dump/chute switch shall be located on the rear of the body, driver side. The passenger side dump/chute switch shall be located on the rear of the body, passenger side.

The valves and chutes shall be switched together and operated by a single switch.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

TANK FILL - 4" FIREMAN'S FRIEND - REAR

There shall be a 4" Fireman's Friend semi-automatic fill valve with a 4" NPT-F fitting installed at the rear of the apparatus. The valve is a stainless steel internally mounted check-type fill valve. Inlet adapters are not included with this item.

FIREMANS FRIEND WARNING PLATE

A permanent plate shall be installed near the fireman's friend indicating "DO NOT EXCEED 100 PSI".

FAST FILL DIFFUSER

A fast fill fitting with a diffuser shall be installed in the water tank.

ADAPTER

The following adapter shall be supplied for the rear tank fill:

4" NPT-M x 4" NH-F swivel

ELBOW

The following elbow shall be supplied for the rear tank fill:

4" NH-M x 5" storz w/ cap

TANKER VENT

A 6" vent shall be installed in lieu of standard size.

MASTER PRESSURE GAUGE

There shall be one (1) 4-1/2" silicone filled gauge that will have a 316 stainless steel bezel. The gauge will read from 0 to 400lb and will be accurate to within 1%. The gauge shall be located on the pump panel and placed in a well lighted position for night apparatus operation.

MASTER INTAKE GAUGE

There shall be one (1) 4-1/2" silicone filled gauge that will have a 316 stainless steel bezel. The gauge will read from 30" to 400lb and will be accurate to within 1%. The gauge shall be located on the pump panel and placed in a well lighted position for night apparatus operation.

DISCHARGE PRESSURE GAUGES

Each discharge shall include a 2-1/2" silicone filled gauge that will have a 316 stainless steel bezel. The gauge face will be white and have black markings. The gauge will read 0 to 400lb and will be accurate to within 1%. The gauge shall be located on the pump panel and placed in a well lighted position for night apparatus operation.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

POLYPROPYLENE WATER TANK

The booster tank shall have a capacity of **1800** US gallons.

CONSTRUCTION:

The water tank shall be constructed of polypropylene or Polyrene sheet stock. This material shall be a non-corrosive thermo plastic.

The booster and/or foam tank shall be of a specific configuration and is so designed to be built as part of the body. The tank shall be constructed utilizing latest thermo plastic welding technology. The tank shall undergo extensive testing prior to installation in the truck. In addition, the completed tank shall be water pressure tested. Baffles, both longitudinal and latitudinal shall be interlocking and thermo welded to minimize water surge during travel, enhancing road handling stability. Openings in the baffles shall be positioned to allow water flow to NFPA standards during filling or pumping operations. The tank shall be mounted on hard rubber cushions to isolate the tank from road shock and vibrations. The tank shall be mounted according to manufactures recommendations. A lifetime manufacturer's statement of Warranty shall warrant each tank to be free from manufacturing defects in material and workmanship for the service life of the vehicle.

FILL TOWER AND COVER:

The tank shall have a combination vent and manual fill tower. The tower shall be located in the left front corner of the tank unless otherwise specified by the customer. The tower shall have a 1/4" thick removable polypropylene screen and a hinged cover. Inside the fill tower approximately 4" down from the top shall be fastened a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I. D. of 4" that is designed to run through the tank and shall be piped behind the rear wheels to maximize traction.

SUMP:

There shall be one (1) sump standard per tank. On tanks that require front suction, 4" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" NPT threaded inlet on the bottom for a drain plug. This shall be used as a combination clean out and drain.

OUTLETS:

There will be two (2) standard tank outlets: One for tank to pump suction line which shall be a minimum of 3" NPT coupling; and One for a tank fill line which shall be a minimum of 2" NPT coupling. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

DESIGN:

The tank shall be designed to include the body, compartments, hosebed, storage sleeves and any upper body compartments. The entire body, hosebed, tank and upper body storage shall be able to be removed with one set of lifting eyes.

POLYPROPYLENE TANK WARRANTY - LIFETIME

The water tank manufacturer shall warrant the booster/foam tank to be free from manufacturing defects in material and workmanship for the service life of the vehicle. The tank must be installed in accordance with tank manufacturer's installation recommendations.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

A copy of the tank manufacturer's warranty, including terms and limitations will be provided upon delivery of the completed apparatus.

WATER TANK LEVEL GAUGE

A FRC Tank vision water level display with ultra-brite LED display shall be installed. A single pressure transducer shall be installed in the main water tank.

WATER TANK LEVEL GAUGE

There shall be a FRC MaxVision water level LED strip light(s) provided and installed. The gauge has LED lights of different colors and operates off the master water level gauge.

Location(s): Rear of body, Two (2) shall be cab supplied

TANK LEVEL GAUGE DRIVER

A 4 light tank level driver module shall be installed for the additional tank level gauges.

CAB WATER TANK LEVEL GAUGE

A FRC mini tank level light shall be installed as directed. The light will be installed in the cab on the switch panel.

TANK LEVEL GAUGE PARK BRAKE DISABLE

The tank gauges shall be disabled when the park brake is released so that the lights are not a distraction when the vehicle is in motion.

HOSEBED

The hose body will be constructed co-polymer polypropylene. 1/8" (.125) 3003 H-14 smooth aluminum will be installed as a drip cap on top of the body sides. The hose compartment floor will be constructed from a ribbed co-polymer polypropylene. The hose body floor ends will be slotted to allow for infinite adjustment of the hose bed dividers. The hosebed floor shall be constructed as part of the tank.

The hosebed shall include an open walkway running from the front of the body to the rear of the apparatus for safely loading and unloading equipment and hose. The width of the walkway shall be determined by the hose capacity storage.

Minimum Hose Capacity:

500' of 5" LDH

600' of 3"

four (4) 250" of 2 1/2" Preconnected

HOSEBED COVER

A 22 oz. hose bed cover shall be provided. The cover shall be fire retardant Hypalon material and installed over the hose bed. The cover shall have bungee straps along the sides and awning track on the front edge. The end of the hose bed cover shall be weighted and cover hose bed opening.

The hosebed cover shall be black.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

HOSEBED DIVIDERS

Five (5) hose bed dividers manufactured from 3/16" smooth aluminum plate with an extruded aluminum base welded to the bottom shall be provided. The dividers shall have an extruded track to slide in to allow the hose bed to be adjusted for different hose capacities. One end of each divider shall have a 3" radius corner with a hand hole cutout provided. The dividers shall be sanded as to prevent damage to hose.

HOSE BED FULL WIDTH DIVIDER

A full width divider shall be installed in the hose bed rear of the water and/or foam fill tower(s). This divider shall be constructed of smooth aluminum or poly and shall be fixed. The adjustable hose bed dividers shall be installed up to this divider with the adjustment tracking attached to the fixed divider.

EXTRUDED ALUMINUM BODY SUPERSTRUCTURE

The body subframe is to be entirely welded, constructed of 6061-T6 extruded aluminum tubing with **minimum** dimensions of 2"x3"x1/4". All vertical components are to be reinforced to the substructure with 2"x2"x1/4" 6061-T6 TUBULAR gussets at strategic points to assure structural integrity.

The body sides are to be supported by 2"x2"x1/4" 6061-T6 structural aluminum tubing welded to form a continuous support matrix for the hose body and compartments.

The tank cradle will be designed to support the bottom of the water tank to prevent movement and structural damage when the unit is loaded and under motion. Reinforced rubber pads with a 60# rating will be installed in the cradle and at the corner angles to cushion the tank; no mechanical attaching devices will protrude through the rubber.

Fender liners will be independent from the compartment sides to provide maximum corrosion and impact protection. Aluminum fenderettes are to be easily removable.

The apparatus body shall be entirely independent from the chassis frame. It is to be attached to the frame over 1/2" x 3" 60# rubber pads running the full length of body. The unit is to be designed so as to be removable from the chassis in the event of future chassis replacement.

POLY APPARATUS BODY

The 100" wide apparatus body is to be constructed from a co-polymer material with 1/2" to 1" material. The tank, body and compartments shall be fabricated as one unit. The compartment floors shall be supported by structure off of the aluminum subframe.

COMPARTMENTATION:

Each compartment shall be "sweep-out" style. The compartments shall be divided as follows:

SIDE:

Compartment	Width	Height	Depth
L1	39"	70"	26"/14"
L2	83"	35"	14"
L3	46"	70"	26"
B	20"	31"	26"
R1	39"	70"	26"/14"
R2	83"	35"	14"
R3	46"	70"	26"

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

L1 COMPARTMENT

The following is a description of items included with the compartment.

ROLL UP DOOR - BRUSHED

ROM series 4 roll-up door will be installed in this compartment. The shutters will be constructed from extruded aluminum with a brushed finish. Internally sealed for weather resistance and quiet operation. Rubber seals will be installed on the vertical components. The door will close/lock with a combination handle/locking bar on the exterior at the bottom.

The door will roll-up in the top of the compartment to allow for maximum use of the compartment interior.

Lighting will be located on the vertical compartment walls for maximum effectiveness.

ROLL UP DOOR SILLS

An extruded aluminum door sill shall be provided for each roll up door.

DOOR STRAPS

An elastic door strap shall be installed for the door(s) in this compartment to assist in lowering the door(s).

ADJUSTABLE SHELF TRACKING

There shall be tracking installed in one (1) compartment to accommodate the installation of adjustable shelves and/or roll-outs. The tracks shall be installed vertically on the walls of the compartment.

ADJUSTABLE SHELF- FULL DEPTH

There shall be an adjustable shelf made from 3/16" aluminum with 2" sides provided and installed on the adjustable tracking.

ADJUSTABLE SHELF- SHALLOW DEPTH

There shall be an adjustable shelf made from 3/16" aluminum with 2" sides provided and installed on the adjustable tracking.

BACKWALL TOOLBOARD

A toolboard will be installed on the compartment upper back wall. The partition shall be made from 3/4" thick co-polymer material.

BEDLINER COATING - ADJUSTABLE SHELVES

The surface of two (2) shelves shall be covered with a black bedliner coating.

LED COMPARTMENT LIGHTS

Two (2) extruded aluminum LED strip lights shall be installed in the compartment. The strip lights shall be installed in a vertical position and run the full height of the compartment, one (1) each side.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

L2 COMPARTMENT

The following is a description of items included with the compartment.

ROLL UP DOOR - BRUSHED

ROM series 4 roll-up door will be installed in this compartment. The shutters will be constructed from extruded aluminum with a brushed finish. Internally sealed for weather resistance and quiet operation. Rubber seals will be installed on the vertical components. The door will close/lock with a combination handle/locking bar on the exterior at the bottom.

The door will roll-up in the top of the compartment to allow for maximum use of the compartment interior.

Lighting will be located on the vertical compartment walls for maximum effectiveness.

ROLL UP DOOR SILLS

An extruded aluminum door sill shall be provided for each roll up door.

DOOR STRAPS

An elastic door strap shall be installed for the door(s) in this compartment to assist in lowering the door(s).

ADJUSTABLE SHELF TRACKING

There shall be tracking installed in one (1) compartment to accommodate the installation of adjustable shelves and/or roll-outs. The tracks shall be installed vertically on the walls of the compartment.

BACKWALL TOOLBOARD

A toolboard will be installed on the compartment upper back wall. The partition shall be made from 3/4" thick co-polymer material.

LED COMPARTMENT LIGHTS

Two (2) extruded aluminum LED strip lights shall be installed in the compartment. The strip lights shall be installed in a vertical position and run the full height of the compartment, one (1) each side.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

L3 COMPARTMENT

The following is a description of items included with the compartment.

ROLL UP DOOR - BRUSHED

ROM series 4 roll-up door will be installed in this compartment. The shutters will be constructed from extruded aluminum with a brushed finish. Internally sealed for weather resistance and quiet operation. Rubber seals will be installed on the vertical components. The door will close/lock with a combination handle/locking bar on the exterior at the bottom.

The door will roll-up in the top of the compartment to allow for maximum use of the compartment interior.

Lighting will be located on the vertical compartment walls for maximum effectiveness.

ROLL UP DOOR SILLS

An extruded aluminum door sill shall be provided for each roll up door.

DOOR STRAPS

An elastic door strap shall be installed for the door(s) in this compartment to assist in lowering the door(s).

ADJUSTABLE SHELF TRACKING

There shall be tracking installed in one (1) compartment to accommodate the installation of adjustable shelves and/or roll-outs. The tracks shall be installed vertically on the walls of the compartment.

ADJUSTABLE SHELVES - FULL DEPTH

There shall be two (2) adjustable shelves made from 3/16" aluminum with 2" sides provided and installed on the adjustable tracking.

BEDLINER COATING - ADJUSTABLE SHELF

The surface of two (2) shelf(s) shall be covered with a black bedliner coating.

LED COMPARTMENT LIGHTS

Two (2) extruded aluminum LED strip lights shall be installed in the compartment. The strip lights shall be installed in a vertical position and run the full height of the compartment, one (1) each side.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

REAR COMPARTMENT

The following is a description of items included with the compartment.

ROLL UP DOOR - BRUSHED

ROM series 4 roll-up door will be installed in this compartment. The shutters will be constructed from extruded aluminum with a brushed finish. Internally sealed for weather resistance and quiet operation. Rubber seals will be installed on the vertical components. The door will close/lock with a combination handle/locking bar on the exterior at the bottom.

The door will roll-up in the top of the compartment to allow for maximum use of the compartment interior.

Lighting will be located on the vertical compartment walls for maximum effectiveness.

ROLL UP DOOR SILLS

An extruded aluminum door sill shall be provided for each roll up door.

LED COMPARTMENT LIGHTS

Two (2) extruded aluminum LED strip lights shall be installed in the compartment. The strip lights shall be installed in a vertical position and run the full height of the compartment, one (1) each side.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

R1 COMPARTMENT

The following is a description of items included with the compartment.

ROLL UP DOOR - BRUSHED

ROM series 4 roll-up door will be installed in this compartment. The shutters will be constructed from extruded aluminum with a brushed finish. Internally sealed for weather resistance and quiet operation. Rubber seals will be installed on the vertical components. The door will close/lock with a combination handle/locking bar on the exterior at the bottom.

The door will roll-up in the top of the compartment to allow for maximum use of the compartment interior.

Lighting will be located on the vertical compartment walls for maximum effectiveness.

ROLL UP DOOR SILLS

An extruded aluminum door sill shall be provided for each roll up door.

DOOR STRAPS

An elastic door strap shall be installed for the door(s) in this compartment to assist in lowering the door(s).

ADJUSTABLE SHELF TRACKING

There shall be tracking installed in one (1) compartment to accommodate the installation of adjustable shelves and/or roll-outs. The tracks shall be installed vertically on the walls of the compartment.

ADJUSTABLE SHELF- FULL DEPTH

There shall be an adjustable shelf made from 3/16" aluminum with 2" sides provided and installed on the adjustable tracking.

ADJUSTABLE SHELVES - SHALLOW DEPTH

There shall be two (2) adjustable shelves made from 3/16" aluminum with 2" sides provided and installed on the adjustable tracking.

BEDLINER COATING - ADJUSTABLE SHELVES

The surface of three (3) shelves shall be covered with a black bedliner coating.

LED COMPARTMENT LIGHTS

Two (2) extruded aluminum LED strip lights shall be installed in the compartment. The strip lights shall be installed in a vertical position and run the full height of the compartment, one (1) each side.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

R2 COMPARTMENT

The following is a description of items included with the compartment.

ROLL UP DOOR - BRUSHED

ROM series 4 roll-up door will be installed in this compartment. The shutters will be constructed from extruded aluminum with a brushed finish. Internally sealed for weather resistance and quiet operation. Rubber seals will be installed on the vertical components. The door will close/lock with a combination handle/locking bar on the exterior at the bottom.

The door will roll-up in the top of the compartment to allow for maximum use of the compartment interior.

Lighting will be located on the vertical compartment walls for maximum effectiveness.

ROLL UP DOOR SILLS

An extruded aluminum door sill shall be provided for each roll up door.

DOOR STRAPS

An elastic door strap shall be installed for the door(s) in this compartment to assist in lowering the door(s).

ADJUSTABLE TRACKING

There shall be tracking installed in the compartment to accommodate the installation of air pack brackets and/or equipment. The tracks shall be installed horizontally on the back wall of the compartment.

EXTINGUISHER BRACKETS

Four (4) extinguisher brackets shall be supplied and mounted in the compartment.

LED COMPARTMENT LIGHTS

Two (2) extruded aluminum LED strip lights shall be installed in the compartment. The strip lights shall be installed in a vertical position and run the full height of the compartment, one (1) each side.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

R3 COMPARTMENT

The following is a description of items included with the compartment.

ROLL UP DOOR - BRUSHED

ROM series 4 roll-up door will be installed in this compartment. The shutters will be constructed from extruded aluminum with a brushed finish. Internally sealed for weather resistance and quiet operation. Rubber seals will be installed on the vertical components. The door will close/lock with a combination handle/locking bar on the exterior at the bottom.

The door will roll-up in the top of the compartment to allow for maximum use of the compartment interior.

Lighting will be located on the vertical compartment walls for maximum effectiveness.

ROLL UP DOOR SILLS

An extruded aluminum door sill shall be provided for each roll up door.

DOOR STRAPS

An elastic door strap shall be installed for the door(s) in this compartment to assist in lowering the door(s).

ADJUSTABLE SHELF TRACKING

There shall be tracking installed in one (1) compartment to accommodate the installation of adjustable shelves and/or roll-outs. The tracks shall be installed vertically on the walls of the compartment.

ADJUSTABLE SHELVES - FULL DEPTH

There shall be two (2) adjustable shelves made from 3/16" aluminum with 2" sides provided and installed on the adjustable tracking.

BEDLINER COATING - ADJUSTABLE SHELVES

The surface of two (2) shelves shall be covered with a black bedliner coating.

LED COMPARTMENT LIGHTS

Two (2) extruded aluminum LED strip lights shall be installed in the compartment. The strip lights shall be installed in a vertical position and run the full height of the compartment, one (1) each side.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

SUPERSTRUCTURE AND BODY WARRANTY - LIFETIME

The manufacturer shall warrant to the original purchaser that the apparatus superstructure and body is structurally sound and free of all structural defects of workmanship and material and further warrants that it will maintain its structural integrity for the life of the apparatus. This warranty shall not pertain to issues of paint finish, hardware, moldings or accessories. The warranty shall terminate upon transfer of possession or ownership by the original purchaser.

ROLL-UP DOOR WARRANTY - SEVEN YEARS

ROM series 4 doors and parts shall be warranted for a period of seven (7) years.

COMPARTMENT INTERIOR FINISH - WHITE POLY BODY

The apparatus compartment interiors will be white co-polymer constructed as part of the apparatus poly body.

RUBRAILS

Poly rub rails shall be provided along the lower edge of the apparatus body. The rub rail assemblies shall be spaced-out and isolated from the body with non-metallic materials. Each rub rail shall be a minimum of 1" thick and tapered at each end.

BODY FACE PACKAGE

The front face of the apparatus body will be trimmed with swirl-finished aluminum plate. Body support extrusions will be drilled and tapped for application of stainless steel fasteners to hold the panels in place. The panels are to be easily removable for service.

All exterior edges will be sanded and rounded to prevent the catching of equipment or any injuries. The exterior seams shall be carefully caulked for water prevention and cosmetics.

REAR TAILBOARD

An 11" rear tailboard step will be provided. The step will be constructed from 1-1/2" extruded aluminum. Extrusion shall have a non-slip surface with punched holes. Tailboard shall be supported by heavy 2" x 2" x 3/8" angles welded directly to the body superstructure.

REAR WHEELWELL TRIM

The area around the rear wheel openings shall be constructed as part of the poly body and painted to match the apparatus body.

POLISHED FENDERETTES

Polished fenderettes shall be installed on the rear wheelwells. They shall be bolted so as to be easily removable for service and/or replacement.

MUDFLAPS

Mud flaps shall be made from black hard rubber and shall be installed on the cab fenders, behind the front tires and on the body fenders, behind the rear tires.

MISCELLANEOUS HARDWARE

One bag of miscellaneous hardware shall be supplied with the finished apparatus. This hardware shall consist of nuts, bolts, screws, washers, etc. used in the manufacture of the apparatus.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

FUEL INLET

There shall be a fuel inlet located inside a SCBA wheelwell compartment. The bezel will be clearly marked "DIESEL FUEL ONLY".

The compartment door shall be a brushed stainless steel door secured by a positive latch.

SCBA BOTTLE STORAGE

There shall be four (4) double-tube SCBA bottle compartments located in the rear wheel well area. Each compartment shall have two (2) eight inch diameter poly tubes for air bottle storage. The driver side rear compartment shall have one (1) eight inch diameter poly tube to allow for the fuel fill. The tubes shall be supported at the front with a molded flange and at the rear with a metal strap. A gasketed stainless steel hinged door shall be installed on each compartment with a positive latch.

GROUND LADDER STORAGE

The apparatus shall be equipped with a ground ladder storage compartment configured through the rear of the body.

Access to the compartment shall be a hinged door, located at the rear of the apparatus.

SUCTION HOSE STORAGE

The apparatus shall be equipped with a suction hose storage compartment configured through the polypropylene tank. The compartment will accommodate two (2) lengths of 6" x 10' hard suction hose.

Access to the compartment shall be a hinged door, located at the rear of the apparatus.

PIKE POLE STORAGE

The pike poles shall be stored in tubes fabricated into the tank.

Access to the compartment shall be a hinged door, located at the rear of the apparatus.

LITTLE GIANT LADDER STORAGE

The apparatus shall be equipped with a standard size little giant storage compartment configured through the polypropylene tank.

Access to the compartment shall be a hinged door, located at the rear of the apparatus.

STORAGE COMPARTMENT HINGED DOOR

A hinged door shall be supplied for the rear equipment storage compartment.

The door shall be 3/16" smooth aluminum with gas shock(s) and a chrome latch.

Chevron striping shall be installed on the exterior of the door to match the rear of the apparatus.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

LIGHTED FOLDING STEPS - FRONT - DRIVER SIDE

There shall be four (4) cast folding steps mounted as required on the front driver side of the apparatus body. The steps will be NFPA compliant. Each step shall include an LED light to light up the top of the step and another LED light to light up the area below the step. The lights will be activated with the parking brake.

LIGHTED FOLDING STEPS - FRONT - PASSENGER SIDE

There shall be four (4) cast folding steps mounted as required on the front passenger side of the apparatus body. The steps will be NFPA compliant. Each step shall include an LED light to light up the top of the step and another LED light to light up the area below the step. The lights will be activated with the parking brake.

REAR BODY ACCESS LADDER

A rear access ladder shall be made of 100% stainless steel and poly. The ladder will be installed on the back of the apparatus for access to the upper body walkway or hose bed. The ladder shall swing out and fold down for a natural climbing angle. The ladder folds up and stores against the body. The handrails are 1-1/2" poly with NFPA slip resistant testing.

INTERMEDIATE REAR STEP WITH GRAB HANDLES

An intermediate rear step will be provided at the rear of the apparatus for easy access to the top of the body. The step will be constructed from an open grip strut aluminum material or NFPA compliant diamondplate aluminum and bolted to extrusions in the structure of the apparatus body.

The intermediate rear step shall include laser cut hand holes to assist in climbing. The holes shall be large enough for a gloved hand and be located on each side of the step.

REAR BODY HANDRAILS

The rear ends of the body shall include built in poly handrails that run the height of the body.

The handrails shall include large slots for a gloved hand with a grooved lead edge.

The handrails shall be painted with a red bedliner.

REAR TOP BODY HANDRAILS

The upper rear of the body shall include built in poly handrails.

The handrails shall include large slots for a gloved hand with a grooved lead edge.

The handrails shall be painted with a red bedliner.

FRONT OF BODY HANDRAILS

There shall be two (2) handrails manufactured from 1-1/4" diameter extruded aluminum with chrome end stanchions. They shall be mounted horizontally at the front of the apparatus body to assist in climbing the front steps.

In the event there is telescoping scene light, ladder or folding step installed in the same location(s), these items may be substituted in an effort to conserve mounting space on the body.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

POLY BODY PAINT FINISH

Poly body exterior shall have no mounted components prior to painting to assure full coverage.

All painted surfaces shall follow the following procedure to insure a lasting finish:

Poly surfaces shall be sanded to remove all burrs and imperfections in material.

Upon the application of the required body fillers and their preparation, the unit shall be primed with a coating designed for corrosion resistance and surface paint adhesion. A sandable primer filler shall then be sprayed on the surface. This primer will be sanded smooth leaving the best surface for top coat. The apparatus body shall be painted with a high luster polyurethane paint system.

PAINT COLOR AND CODE: Match primary chassis color

PAINT WARRANTY - TEN YEARS

The paint performance guarantee will cover the areas of the vehicle finished with the specified product for a period of ten (10) years beginning the day the vehicle is delivered to the purchaser.

The areas as outlined on the Guarantee Certificate will be covered for the following paint failures:

GUARANTEE INCLUSIONS:

FULL APPARATUS BODY MANUFACTURED AND PAINTED BY THE MANUFACTURER:

- Peeling or de lamination of the topcoat and/or other layers of paint.
- Cracking or checking.
- Loss of gloss caused by cracking, checking, or hazing.
- Any paint failure caused by defective finishes which are covered by this guarantee.

All guarantee exclusions, limitations, and methods of claims are covered in the full certificate provided to the original purchaser.

The paint warranty is a full term (non-prorated) warranty.

TOUCH UP PAINT

A container with touch-up paint shall be provided with each truck. The container shall have a small touch-up brush that is attached to the top of the container.

DISSIMILAR METALS

The body and components shall be thoroughly protected against corrosion and/or oxidation caused by contact between dissimilar metals. These areas shall be protected by the use of corrosion resistant primers, gaskets and "ECK" (electrolic corrosion material) or any equivalent material.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

IMITATION GOLD LEAF LETTERING

The lettering will be imitation gold leaf and will be on the cab doors and/or body of the vehicle. Imitation gold leaf lettering shaded in black shall be applied as directed by the fire department.

Per customer design
Sixty (60) Characters
3-1/2" Shaded

NFPA BODY STRIPE

A 4" body stripe of black reflective is to be furnished around the entire apparatus with the exception of the wheel wells, pump panels, grille and rear of the apparatus over the chevron material.

The stripe will transform to a "Z" configuration on the body compartment directly ahead of the rear wheels up to the point 6" above the over-wheel compartment door hardware.

Customer approval of the final design is required.

CHEVRON STRIPING - REAR

Chevron striping shall be applied to the entire rear wall of the apparatus body. The chevrons shall consist of 6" wide reflective striping at 45 degree angles from the tailboard in an inverted "V" pattern. The stripes shall alternate red/black reflective

CHEVRON STRIPING - FRONT BUMPER

Chevron striping shall be applied to the front bumper of the apparatus body. The chevrons shall consist of 6" wide reflective striping at 45 degree angles from the tailboard in an inverted "V" pattern. The stripes shall alternate red / black reflective

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

WELDON VMUX MULTIPLEXED ELECTRICAL SYSTEM

The apparatus body will be a continuation of the Spartan supplied Weldon VMUX electrical system that accommodates the needs of the apparatus as presented in the chassis section of our proposal.

All electrical equipment installed by the apparatus builder shall conform to current automotive electrical system standards and the latest standards as outlined in NFPA #1901.

All electrical wire installed by the apparatus builder shall be rated to carry 125 percent of the maximum current for which the circuit is protected. A high-temp automotive primary wire that is insulated with chemically cross-linked Polyethylene and withstands prolonged temperatures of up to 350 degrees F. without melting or fusing shall be used. Wire shall be highly resistant to grease, oil, acids, brake fluid and abrasion. Wire shall meet or exceed S.A.E. specifications J1127.

Electrical connections in exposed areas outside of the cab shall be made using heat shrink or weather-proof connections. All connections shall have a corrosion preventative compound applied to them. All weather exposed lights shall have the sockets coated with this same compound.

Wire shall be individually color coded and be labeled every six (6") inches on the insulation. Wiring installed by body builder shall be run in a heat protective loom that is held in place with a rubber coated bracket that is fastened in place with stainless steel screws.

There will be nodes that will be used as test points and for service. The location of these points will be in the apparatus cab and in an enclosed box recessed into the side or back wall of a rear compartment. All wire connections shall be protected to promote a lasting, corrosion-free connection. All exterior terminal blocks will be installed in a weather resistant box. All wire harnesses will be easily accessible and replaceable.

12-V NFPA TEST

The following NFPA 9-14 test requirements shall be performed:

- Reserve capacity test
- Alternator test at idle
- Alternator test at full load
- Low voltage alarm test

CLEARANCE LIGHTS AND REFLECTORS

Clearance lights and reflectors shall be installed to meet current DOT standards and include:

- Two (2) Red LED marker lights
- Four (4) Red reflectors
- Two (2) Amber reflectors
- One (1) Red LED three-light cluster under the rear step.

AUXILIARY TURN / RUNNING LIGHT

Two (2) auxiliary LED amber marker/turn lights shall be mounted just forward of rear axle, in the rear wheel well area. The lights shall be wired into the chassis light system and shall be flush mounted within a rubber grommet.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

STOP/TAIL, TURN AND BACKUP LIGHTS

Whelen M6 series lights shall be installed at the rear of the apparatus as follows:

- Red LED stop/tail light, one (1) each side
- Amber LED turn light, one (1) each side
- Clear LED backup light, one (1) each side

Each shall be installed inside a one-piece housing, one each side. The lower rear warning light shall be included in the 4 light housing.

REAR LOWER LIGHTS BEZEL COLOR

The surface mounted lower stop/tail/turn and back up lights shall include black bezels.

LICENSE LIGHT AND BRACKET

A polished aluminum LED license plate light and bracket shall be installed on the rear of the vehicle.

LED PUMP GROUND LIGHTS (2)

Under body lighting will be provided for the apparatus pump module. Two (2) LED strip lights with clear lenses will be mounted below the runningboards, one (1) each side. The lights will be controlled by the parking brake switch.

LED BODY GROUND LIGHTS (4)

Under body lighting will be provided for the apparatus body. Four (4) LED strip lights with clear lenses will be mounted below the apparatus body, one (1) under each full height compartment. The lights will be controlled by the parking brake switch.

LED REAR TAILBOARD / BUMPER GROUND LIGHTS (2)

Under tailboard/bumper lighting will be provided for the rear of the apparatus. Two (2) LED strip lights with clear lenses will be angle mounted below the rear tailboard/bumper. The lights will be controlled by the parking brake switch.

RECESSED STEP LIGHTS - LED

There shall be LED recessed step lights mounted in such a manner as to light the area around the runningboards, tailboard, and rear intermediate step.

ACCESS LADDER STEP LIGHTS - LED

There shall be three (3) Whelen LED step lights mounted in such a manner as to light the area around the access ladder. The light shall be recess mounted in a rubber grommet or surface mounted in a chrome bezel.

PUMP SERVICE LIGHT

There shall be a LED light with clear lens mounted inside the pump compartment to provide sufficient lighting.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

COMPARTMENT DOOR SWITCHES

All exterior compartment doors will be provided with a door switch that shall activate the "Door Ajar" indicator light. The switch shall be installed not to interfere with loading or unloading the equipment stored within the compartment.

DOOR AJAR INDICATOR

There shall be a red flashing door-ajar indicator located on the cab in easy view of the driver. The light shall be illuminated automatically whenever the apparatus parking brake is released and the following conditions exist:

- Any passenger or equipment door is open.
- Any ladder or equipment rack is not in the stowed position.
- The aerial stabilizer system not in its stowed position.
- Powered light tower is extended.
- Any other device is opened, extended or deployed that creates a hazard, or is likely to cause damage to the apparatus if it is moved.

HOSEBED LIGHTS

A LED strip light shall be installed to light the hosebed. The light shall be activated by the park brake switch. The light shall be protected and be mounted at the front of the hosebed.

SIDE SCENE LIGHTS

The front upper body sides include two (2) Whelen model Pioneer PCPSM2(x) surface mount lights installed, one (1) on each side of the body.

The 154 watt +12v DC duel Pioneer lighthouse shall incorporate Super-LED® combination flood/spot light installed in ABS Cylolac™ resin surface mount housing. The surface mount housing will be chrome plated. The PCPSM2 configuration shall consist of 24 white Super-LEDs for the spot light with a specialized spot reflector on the bottom, 48 white Super-LEDs in the flood light with a clear optic collimator/metalized reflector assembly on the top, and a clear non-optic polycarbonate lens. The Pioneer flood/spot light shall have 16,000 usable lumens. The PCPSM2 new combination optic design projects light directly down at 5° and producing illumination to the side of the vehicle arching upward to a 90° pattern of light.

SIDE SCENE LIGHTS

The rear upper body sides include two (2) Whelen model Pioneer PCPSM2(x) surface mount lights installed, one (1) on each side of the body.

The 154 watt +12v DC duel Pioneer lighthouse shall incorporate Super-LED® combination flood/spot light installed in ABS Cylolac™ resin surface mount housing. The surface mount housing will be chrome plated. The PCPSM2 configuration shall consist of 24 white Super-LEDs for the spot light with a specialized spot reflector on the bottom, 48 white Super-LEDs in the flood light with a clear optic collimator/metalized reflector assembly on the top, and a clear non-optic polycarbonate lens. The Pioneer flood/spot light shall have 16,000 usable lumens. The PCPSM2 new combination optic design projects light directly down at 5° and producing illumination to the side of the vehicle arching upward to a 90° pattern of light.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

REAR SCENE LIGHTS

The rear of the body shall include (2) Whelen model Pioneer PCPSM1(x) surface mount lights installed, one (1) on each side.

The 76 watt +12v DC single Pioneer lighthouse shall incorporate Super-LED® combination flood/spot light installed in ABS Cycloc™ resin surface mount housing. The surface mount housing will be chrome plated. The PCPSM1 configuration shall consist of 12 white Super-LEDs for the spot light with a specialized spot reflector on the bottom, 24 white Super-LEDs in the flood light with a clear optic collimator/metalized reflector assembly on the top, and a clear non-optic polycarbonate lens. The Pioneer flood/spot light shall have 7,800 usable lumens. The PCPSM1 new combination optic design projects light directly down at 5° and producing illumination to the side of the vehicle arching upward to a 90° pattern of light.

SCENE LIGHTING BEZEL COLOR

The surface mounted scene lights shall include black bezels.

SCENE LIGHTING SWITCHING

The body and/or cab mounted scene lights shall include switches in the cab. Each side of the apparatus will include its own switch if applicable.

SCENELIGHT BACKUP RELAY

A relay will be provided in the rear scene light circuit to allow automatic use of the lights when the vehicle is placed in revers.

WILL-BURT LIGHT TOWER SPECIFICATIONS

Night Scan Powerlite NS 4.5-900-6 WHL Spot/Flood 120 VAC
Model Number 721530002

A Will-Burt Night Scan Powerlite Series shall be provided. The horizontal surface mounted tower shall be raised electrically and pneumatically.

Design and Construction

The tower shall be a series of graduated extruded aluminum tubes that nest one inside another. The tower shall have an extended height of approximately 15 ft. / 4.5 m above the mounting location and a stowed height of approximately 11.4375" / 29.1 cm above the mounting surface. The tower shall be approximately wide 44.5625" / 113.2 cm by 74.4375" / 189.1 cm in length. The tower shall be designed to sustain the intended top load with a 125 percent safety factor and shall exceed NFPA requirements of a minimum 50 mph (80 kph) wind when in a fully raised and unguyed position. The tower shall be of a compact design with a total weight of approximately 176 pounds (79.8 kilograms). The light tower shall not exceed 180 lbs. / 82 kg.

The tower tubular sections shall be constructed of high strength, heat-treated 6061-T6 aluminum tubes and collars. Each tube shall be protected by low friction synthetic collars for smooth operation and long life. Bumpers shall be designed to reduce shock on extension and retraction. All exterior surfaces shall be anodized for long life and fasteners shall be stainless steel for corrosion resistance.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

Nesting System

The tower shall have an “auto-stow” function. A double click of the mast down button will stow, retract, and shut power off to the unit. An integrated saddle assembly with synthetic, non-marring rests shall be provided for the tower and flood light assembly in the nested position.

Floodlight Rotation and Tilt Operation

The tower shall be equipped with a Will Burt Model RCP (remote control positioner) to control the rotation and direction of the lights in a manner that provides 360° of light coverage. The remote control positioner unit shall be equipped with three (3) gear motors; one for rotation and two for individual positioning of each floodlight bank (one (1) motor for left side tilting and one (1) motor for right side tilting.) This feature shall be designed so that the lighting may be directed in two separate locations *equally* and *simultaneously* for enhanced safety and functionality. The positioner shall also rotate the floodlight assembly from zero to 350 degrees and tilt the floodlight assembly from 0 to 346 degrees.

Hand-held Remote Control

A safety yellow in color for high visibility, hand held remote control pendant, connected to a quick-disconnect, 25 ft. (7.62 meter) coiled cord shall be provided to control the tower. All functions of the tower shall be accessible through this remote control including raising with “auto-up” ability, lowering with “auto-stow” ability, rotation and separate buttons for tilting of each floodlight bank and floodlight switching. An auxiliary power button shall also be included to control optional equipment such as strobe lights or a camera that is mounted to the mast. Each button of the controller shall have a corresponding LED light that provides operational feedback. An LED display that includes alphanumeric feedback shall be located in the center of the controller. This display shall provide operational feedback and error codes if they occur.

Pneumatic Controls

The pneumatic controls to raise and lower the tower shall include an air regulator and solenoid valves. Lights will be operational within approximately 12 seconds from elevation initiation. The tower shall be able to be fully elevated in approximately 60 seconds. In the event of malfunction of the elevating system while the tower is in operation or being deployed, a method of limiting the rate of descent shall be provided to prevent injury to personnel or damage to the equipment.

Two allen keys as well as directions are included under the cover to fold the mast into the saddle if manual stowage of mast is required.

The air supply for pneumatic operation of the tower shall be from an external source with supplied air regulator and dual solenoids. The installer shall provide piping, shut-off valve, pressure protection valve, air compressor, auxiliary air tank(s) and additional required equipment. The complete air system shall be installed in conformance to applicable NFPA and FVMSS brake standards.

Electrical Installation

The wiring harness for the floodlights, accessories, and remote control positioner shall be internally routed through telescoping aluminum tubing with a highly flexible coil cord.

Installer supplied 12 or 24 volt electrical wiring shall be provided with electrical connections at the tower assembly in conjunction with appropriate electrical power for the floodlights. The installer as required by manufacturer’s installation guidelines shall provide appropriate wiring from the circuit breaker panel for connection to the tower. The electric power to the tower and light units shall automatically disconnect whenever the tower is in the nested position.

The tower operation area shall be illuminated automatically by a look up light whenever the tower is in operation. Any upward movement of the tower from the nested position shall energize a red warning

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

light in the cab and a secondary light located at the tower control area. In addition, the installer shall provide parking brake interlocks and other equipment as required by applicable NFPA standards.

Floodlight System

Six (6) Whelen Pioneer Plus™ Model # PFP2AC shall be provided. The 150 watt +120v AC Pioneer lighthouse shall incorporate Super-LED® dual flood light installed in a die-cast white powder coated aluminum housing. The PFP2AC configuration shall consist of 72 white Super-LEDs with a clear optic collimator/reflector assembly and a clear non-optic polycarbonate lens. The Pioneer flood light shall have 15,000 usable lumens for a total of 90,000 lumens. 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 PFP2AC shall be vibration resistant. The Pioneer™ PC boards shall be conformal coated for additional protection. Two breathable membrane patches shall be installed to the bottom of the housing to maintain a consistent internal pressure. The PFP2AC shall have extended LED operation with low current consumption and low operating temperature. The fixture shall measure H=4.125", W=14", D=2.50"

Warranty

The tower assembly shall carry a two (2) year parts and labor warranty. Exact provisions of such warranty shall be provided with the proposal and at time of delivery of product.

Labeling and NFPA Compliance

Essential operating instructions and warning labels shall be provided in compliance to applicable OSHA, SAE, and NFPA standards. Appropriate labels on the "hazards of electrocution" associated with the operation of a light tower shall be installed in the appropriate areas.

A label shall be provided at the operator's position by the installer with the following information:

- 1. Extended height of the tower from the ground.
- 2. Bulb replacement data.

The tower and installation shall be in full compliance to applicable sections of the current NFPA 1901 Standard.

Testing and Quality Assurance

The tower manufacturer shall be ISO 9001:2008 certified. In addition, quality control and manufacturer testing shall be completed prior to shipment of the tower. The final installer shall test the operation of the tower for a minimum of 2 hours at full load, with testing documentation provided upon delivery.

Manuals

Detailed service, parts, operating, and installation manuals shall be provided by the tower manufacturer. Samples of such manuals shall be provided on request. A CD ROM manual will be provided to the end user.

LIGHT TOWER INSTALLATION

The light tower shall be installed on the reinforced chassis cab roof.

LIGHT TOWER CONTROLLER INSTALLATION

The light tower controller shall be installed on the front wall of the L1 compartment.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

LIGHT TOWER SHROUD

A protective aluminum shroud painted to match the cab and/or body will be provided.

20-AMP GFI BREAKER

There shall be one (1) 20-Amp/120-volt AC, single pole ground fault interrupter (GFI) circuit breaker, provided in lieu of the standard 20-AMP breaker. The GFI breaker will be wired to only one (1) electric receptacle or electric cord reel.

HYDRAULIC GENERATOR

A PTO hydraulic driven generator shall be installed. System shall consist of pump, reservoir/filter, and motor/generator/cooler tray assembly. System shall be driven from a PTO mounted on the side of transmission. Model shall be a SMART/POWER HR-8 8000-watt.

GENERATOR LOCATION

The generator will be located in the forward section of the hosebed. This will allow adequate ventilation and protection from the elements. A wall will be provided to separate the generator from the hose load.

CHELSEA PTO

A Chelsea PTO shall be installed on the side of chassis transmission for powering a hydraulic generator.

120-240-V NFPA TEST

The following tests shall be performed on the 110-Volt line voltage system.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles.

THE FOLLOWING SHALL BE RECORDED:

Cranking time until the prime mover starts and runs, if applicable.

Voltage, frequency, and amperes at continuous full rated load.

Prime mover oil pressure, water temp., transmission temp., hydraulic temp., and the battery charge rate, as applicable.

Ambient temperature and altitude.

OPERATIONS TEST

The power source shall be operated at 100% of its nameplate voltage for a minimum of Two (2) hours. This test can be performed during the pumping test if applicable.

BREAKER PANEL

An 8-position breaker panel shall be supplied as directed by the customer as follows:

A main disconnect shall be included in the breaker panel.

Location: L1 rear wall flush mounted with access panel

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

AUTOMATIC TRANSFER SWITCH

An automatic transfer switch shall be installed on the apparatus. The unit automatically transfers power from the shoreline to generator. The switch is limited to 20 Amps.

HOUSEHOLD DUPLEX RECEPTACLE- TRANSFER SWITCH

There shall be four (4) 120-volt/20 amp household duplex receptacle(s) mounted as directed by the Fire Department. A hinged weatherproof cover shall be installed over any exterior mounted receptacle(s).

The receptacle(s) shall be flush mounted.

Location(s): L3, R3, Two (2) TBD by department at Precon

20-AMP GFI BREAKER

There shall be one (1) 20-Amp/120-volt AC, single pole ground fault interrupter (GFI) circuit breaker, provided in lieu of the standard 20-AMP breaker. The GFI breaker will be wired to only one (1) electric receptacle or electric cord reel.

ELECTRIC CORD REEL

Two (2) electric rewind cord reels shall be supplied with 150' of 12-3 wire cord. The reels will be wired to a dedicated breaker in the main power box. A push button switch for rewind shall be located in a convenient location.

A roller guide and ball stop will be provided.

Location: L3 and R3 compartments as high and forward on the back wall as possible

20-AMP GFI BREAKER

There shall be one (1) 20-Amp/120-volt AC, single pole ground fault interrupter (GFI) circuit breaker, provided in lieu of the standard 20-AMP breaker for each cord reel. The GFI breaker will be wired to only one (1) electric receptacle or electric cord reel.

CORD REEL ROLLERS

There shall be a captive roller system furnished for the mounted cord reels. The rollers shall be installed to guide the cord on and off the reel assembly.

ELECTRICAL JUNCTION BOX

A four-way electrical junction box with indicator light and pigtail cord shall be supplied for each reel. The junction boxes will be independent from the cord reels.

Receptacles will be as follows:

- Position 1: TBD
- Position 2: TBD
- Position 3: TBD
- Position 4: TBD

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

RADIO INSTALLATION (2)

The apparatus shall have two (2) customer supplied single head radios installed as directed. Programming of the radio is not included.

12-V POWER POINT - CONSTANT POWER - FUSE BLOCK

There shall be two (2) 12-volt constant power 6-postion Blue-Sea fuse block with ground bar and cover installed as directed by the Fire Department.

Location(s): TBD by department at precon

INTERCOM SYSTEM

A Fire-Com, Model 5100D, single radio interface intercom system should be provided. The driver and officer should have a wireless headset charging drop and base station. Headset jacks should be located at the four (4) crew cab positions, at both forward and rear facing seats.

The wireless base station should have a 100' to 1100' range, line of sight. Objects between the transmitter and receiver affect range.

The following components should be supplied with this system:

- One (1) 5100D Intercom unit
- One (1) Single wireless radio base station (Driver - Officer)
- Four (4) wired interface modules (4 Crew)
- All necessary cords and wiring.

RADIO AND RADIO INTERFACE CABLE The body builder should supply and install the required radio and radio interface cable before delivery of the vehicle.

HEADSET, UNDER HELMET, INTERCOM ONLY There should be four (4) Firecom model UH-54 under helmet, intercom only headset(s) provided Crew Cab Seating Positions.

Each headset should feature:

- Coiled cord with rugged angled plug
- Noise cancelling electric microphone with wind muff
- Flex boom rotates 180 degrees for left or right dress
- Detent-volume control · Liquid foam ear seals
- Microphone on/off button

HEADSET ONLY, WIRELESS, RADIO TRANSMIT There should be two (2) Firecom Model UHW505 wireless, radio transmit headset(s) provided. A 12-volt charging pigtail with plug should be provided Driver and officer positions.

Each headset should feature:

- Noise cancelling electric microphone
- Flex boom rotates 180 degrees for left or right dress
- Detent-volume control
- Liquid foam ear seals
- Push To Talk button
- Typical fire scene range is 300-500 feet
- Digital encoding for secured communications
- Rechargeable lithium ion battery, 500 cycles minimum
- Eight (8) to ten (10) hours talk time, three (3) hour charge time

HEADSET HANGERS There should be six (6) headset hanger/s installed for the intercom system. The hanger/s should be installed each seating position.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

BACKUP CAMERA WIRING

Wiring and a weather shield shall be supplied for the chassis supplied backup camera. The camera shall be installed below the hosebody handrail, rear step or some other mechanism to prevent damage.

NFPA WARNING LIGHTS

The optical warning system on the fire apparatus shall be capable of two separate signaling modes during emergency operations. One mode shall signal 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.

The switching for the two different modes shall be through switches and relays that sense the position of the parking brake.

REAR WHEEL WELL WARNING LIGHTS

The rear wheel wells shall include two (2) Whelen 500 Series TIR6™ Super LED warning lights, one (1) on each side. The lights shall feature multiple flash patterns including steady burn. The lights shall be recess mounted within a rubber grommet kit.

The warning lights shall be red.

REAR TAILBOARD SIDE WARNING LIGHTS

The rear tailboard 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. The lights shall be mounted within a cast housing located on the top of the tailboard sides.

The warning lights shall be red.

FRONT UPPER BODY SIDE WARNING LIGHTS

The front upper body sides shall include two (2) Whelen M9 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 apparatus within a bezel.

The warning lights shall be red.

REAR UPPER BODY SIDE WARNING LIGHTS

The rear upper body sides shall include two (2) Whelen M9 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 apparatus within a bezel.

The warning lights shall be red.

UPPER REAR WARNING LIGHTS

The upper rear of the apparatus shall include two (2) Whelen M9 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 apparatus within a bezel.

The warning lights shall be red.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

LOWER REAR WARNING LIGHTS

The lower rear of the apparatus 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 apparatus within a bezel.

The warning lights shall be red.

WARNING LIGHTING BEZEL COLOR

The body and/or cab surface mounted warning lights shall include black bezels.

WARNING LIGHTING LENS COLOR

The body and/or cab surface mounted warning lights shall include colored lenses to match the warning light color.

WARNING LIGHTING SWITCHING

The body and/or cab mounted warning lights shall include switches in the cab. Each side of the apparatus will include its own switch if applicable.

A master warning light switch shall also be included.

TRAFFIC ADVISOR

A Whelen TAL65 LED traffic advisor shall be installed on the rear of the apparatus, as high as is practical. The light is a six (6) head LED bar and includes a Whelen control head.

The light shall be mounted within and protected by an intermediate step.

CONTROLLER BRACKET

A flush mount traffic advisor controller bracket shall be supplied and installed in the center console/dash.

APPARATUS WARRANTY - TWO YEARS

The completed apparatus shall be warranted to be free from defects in workmanship and materials under normal use and service for a period of two (2) years from the date of delivery to the Fire Department. This warranty shall cover the costs for parts and labor for this period of time.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

ROOF LADDER

One (1) Duo Safety Model 775-A, 14 foot aluminum roof ladder shall be provided on the apparatus. The ladder shall be equipped with folding steel roof hooks on one end and steel spikes on the other end. The ladder shall meet or exceed all latest NFPA Standards.

EXTENSION LADDER

One (1) Duo-Safety Model 900-A, 24 foot two-section aluminum extension ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA standards.

FOLDING LADDER

One (1) Duo Safety Model 585-A, 10 foot folding aluminum ladder shall be provided on the apparatus. The ladder shall meet or exceed all the latest NFPA Standards.

LITTLE GIANT LADDER

There shall be a Little Giant Fireman's Overhaul 17 aluminum ladder provided with the apparatus.

PIKE POLE

One (1) Duo Safety 8' pike pole with round handle shall be provided on the apparatus. The pike pole shall be of fiberglass construction.

PIKE POLE

One (1) Duo Safety 10' pike pole with round handle shall be provided on the apparatus. The pike pole shall be of fiberglass construction.

SUCTION HOSE

One (1) 6" x 10 foot length of AWG flexible suction hose shall be provided and equipped with lightweight couplings.

One (1) 6" x 12 foot length of AWG flexible suction hose shall be provided and equipped with lightweight couplings.

WHEEL CHOCKS

One (1) pair of Worden model HWG Grip-Lock aluminum wheel chocks shall be mounted on the apparatus. They shall be mounted in model U815 slide-out brackets.

WHEEL CHOCKS LOCATION

The wheel chocks shall be mounted fore of the rear axle on bottom side of the lower compartments.

FREMONT FIRE DEPARTMENT

**Bidder
Complies**

Yes No

CET PORTABLE PUMP

A CET 23HPVGD-2D portable pump shall be supplied.

PUMP UNIT SPECIFICATIONS

430 GPM @ 25 PSI
310 GPM @ 50 PSI
110 GPM @ 100 PSI

Location: TBD

Note: The pump shall include a full support frame cage and wheels

PORTABLE ATTACK MONITOR PACKAGE

Task Force Tips Blitzfire model # XXC-42-NH1 portable lightweight attack monitor package comprising of monitor, stack tip nozzles and bracket shall be supplied.

The monitor model number XX111A shall include an integral safety shut off valve that will automatically shut down the water flow in the event control of the monitor is lost. The water flow is controlled by a six-position detent, turbulence free slide valve. The detent flow control shall also function as the reset for the safety shut off valve to resume water flow.

The water inlet shall pivot up and down to allow for stability on uneven surfaces. The discharge has vertical elevation travel between 10 and 40 degrees above horizontal with a ball and socket joint. The same ball and socket joint shall allow for horizontal adjustment of 20 degrees left and right of center. The monitor shall have a flow rating from 100 to 500 GPM (400-2000 l/min). Outlet has removable stream shaper. The monitor shall have a 2-1/2" (64 mm) female NH swivel rocker lug inlet and a 2-1/2" (64 mm) male NH outlet.

The monitor shall have folding stabilization legs with carbide tips, which are concealed in the carry and stow positions. An integral carrying handle that also functions as an attachment point for the included anchor strap shall be provided. For corrosion resistance, the monitor shall be constructed from hardcoat anodized aluminum alloy and have a blue powder coat interior and exterior finish.

Task Force Tips model # MST-3NJ smooth bore stacked tip set shall be provided. For corrosion resistance the tip set shall be constructed from hardcoat anodized aluminum alloy. The set shall consist of three (3) tips with the base tip having a 2-1/2" (64 mm) female NH swivel inlet and 1.5" (38 mm) orifice outlet. The other tip sizes shall be 1.25" (32 mm) and 1" (25 mm). The two larger tips shall have 1-1/2" (38 mm) male NH threads. Each tip shall be laser engraved with a flow/pressure chart and orifice size.

Task Force Tips model # XX-B storage bracket and mounting screws shall be supplied. The bracket shall be constructed from stainless steel and hardcoat aluminum and be designed for horizontal or vertical installation. The bracket shall include an adjustable strap assembly for elimination of nozzle movement. The bracket is designed for storage of the Blitzfire portable monitor. The monitor shall have a unique serial number and all components shall be covered by a five-year warranty.

DELIVERY PREP

The apparatus shall be detailed and cleaned prior to delivery.

All metal edges shall be carefully sanded and rounded. All compartment and exterior sheeting seams shall be carefully caulked.

Any loose equipment shall be stored on the truck.