

Quote SO

Bulldog Fire Apparatus

Bulldog Fire Apparatus
 Marc Mazza
 17 Winter Street
 P.O. Box 58
 Woodville, MA 01784
 mmazza@bulldogfa.com

Exp. Date: 08/25/2022
Quote No: BFDFC94Pumper-0001
PUMPER: FMP-30-100 Commercial Pumper - Extruded / Modular
LEGALS: FFA-00-300 Legals - Pumpers
CHASS-COMM: FCC-30-200 Chassis - Commercial Pumper
PUMP-ENC: FPE-20-100 Pump Enclosure - Side Mount
BODY: FBP-33-200 Body - Extruded Pumper (500-1250 Gallons)
BODY-CMNT: FBC-30-100 Body Components - Pumpers
ELE-CMPNT: FEC-30-100 Elec. Components - Pumper Commercial
PAINT: FPC-10-200 Paint - SM Extruded
WRNTY-MNLS: FWM-50-300 Warranty / Manuals - Pumpers Commercial
EQUIPMENT: FEP-30-100 Loose Equipment Pkg. - Pumper
ADMN-PROMO: FPA-10-000 Administration

01/25/2023

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PART NO	S	DESCRIPTION	QTY	ID
== Legals - Pumpers - 622.001 06/06/22 ==				
00-06-0420		Payment Terms: Ferrara Standard	1	FE
00-12-0220		Single Source Manufacturer	1	FE
00-12-0420		Manufacturer - Virtual	1	FE
00-12-0620	<	Principal Dimensions	1	FE
The apparatus shall have the following dimensions:				
Maximum Acceptable Overall Length: 32'				
Maximum Acceptable Overall Height: 10'				
Maximum Acceptable Wheelbase: 190"				
Maximum Acceptable Cab to Axle: 136"				
00-12-0820		Certified Welders	1	FE
00-14-0220		Drawings - Proposal	1	FE
00-14-0620		Drawings - Approval	1	FE
00-18-0820	>	Vehicle Transportation - DEALERS ONLY!!!!!!!	1	FE
00-18-1820	S	Delivery Time: Calendar Days	260	FE
<u>DELIVERY TIME</u>				
The apparatus shall be delivered within Two Hundred Sixty (260) calendar days after receipt of chassis from Spartan.				
The manufacturer shall not be held liable for changes arising from its failure to make or delay in making delivery because of fire, flood, strike, riot, chassis shortage, accidents, acts of God, or any circumstances beyond our control.				
00-18-2020		Vehicle Familiarization & Demonstration	1	FE
00-22-1020	<	Service Center (Edit Service Center)	1	FE
Company Name: Bulldog Fire Apparatus				
Address: 17 Winter Street				
City & State: Woodville, MA 01784				
Contact: Steve Harnois				
Phone: (508) 435-4200				
== Chassis - Commercial Pumper - 622.001 06/06/22 ==				
COMMERCIAL CHASSIS - 4 DOOR CAB PUMPER				
				FE
				FE

PART NO	S	DESCRIPTION	QTY	ID
00-G4-0820	S	> CHASSIS - Spartan FC94 MFD w/10" Riased Roof	1	FE
		<u>MODEL</u>		
		The chassis shall be an FC-94 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.		
		<u>MODEL YEAR</u>		
		The chassis shall have a vehicle identification number that reflects a 2024 model year.		
		<u>COUNTRY OF SERVICE</u>		
		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.		
		<u>CAB AND CHASSIS LABELING LANGUAGE</u>		
		The cab and chassis shall include the applicable caution, warning, and safety notice labels with text to be written in English.		
		<u>APPARATUS TYPE</u>		
		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.		
		<u>VEHICLE TYPE</u>		
		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.		
		<u>VEHICLE ANGLE OF APPROACH PACKAGE</u>		
		The angle of approach of the apparatus shall be a minimum of 8.00 degrees.		
		<p>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 <i>V</i>). Measure the horizontal distance from the plumb bob point to the steel strip or string running from front tire to front tire (distance <i>H</i>). Divide the vertical distance by the horizontal distance. The ratio of <i>V/H</i> 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</p>		

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		<p>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.”</p> <p><u>AXLE CONFIGURATION</u></p> <p>The chassis shall feature a 4 x 2 axle configuration consisting of a single rear drive axle with a single front steer axle.</p> <p><u>GROSS AXLE WEIGHT RATINGS FRONT</u></p> <p>The front gross axle weight rating (GAWR) of the chassis shall be 21,500 pounds.</p> <p>This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.</p> <p><u>GROSS AXLE WEIGHT RATINGS REAR</u></p> <p>The rear gross axle weight rating (GAWR) of the chassis shall be 27,000 pounds.</p> <p>This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.</p> <p><u>PUMP PROVISION</u></p> <p>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.</p> <p><u>WATER & FOAM TANK CAPACITY</u></p> <p>The chassis shall include a carrying capacity of 750 gallons (2839 liters) to 1250 gallons (4732 liters). The water and/or foam tank(s) shall be supplied and installed by the apparatus manufacturer.</p> <p><u>CAB STYLE</u></p> <p>The cab shall be a custom, fully enclosed, MFD model with a 10.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to eight (8) seating positions.</p> <p>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.</p> <p>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.</p>		

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		<p>All interior and exterior seams shall be sealed for optimum noise reduction and to provide the most favorable efficiency for heating and cooling retention.</p> <p>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.</p> <p>The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 131.10 inches with 54.00 inches from the centerline of the front of the axle to the back of the cab.</p> <p>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.</p> <p>The cab shall offer an interior height of 57.50 inches from the front floor to the headliner in the non-raised roof area and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 51.88 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p><u>CAB FRONT FASCIA</u></p> <p>The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick plate which shall be an integral part of the cab.</p> <p>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.</p>		

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	<p>The front cab fascia shall include two (2) 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. Two (2) chrome plated bezels shall be provided on each side around each set of two lamps.</p>		
	<p><u>FRONT GRILLE</u></p>		
	<p>The front fascia shall include a 304 stainless steel front grille.</p>		
	<p><u>CAB UNDERCOAT</u></p>		
	<p>There shall be a rubberized undercoating applied to the underside of the cab that provides abrasion protection, sound deadening and corrosion protection.</p>		
	<p><u>CAB SIDE DRIP RAIL</u></p>		
	<p>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.</p>		
	<p><u>CAB PAINT EXTERIOR</u></p>		
	<p>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.</p>		
	<p>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.</p>		
	<p>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.</p>		
	<p>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.</p>		
	<p><u>CAB PAINT MANUFACTURER</u></p>		
	<p>The cab shall be painted with Sikkens paint.</p>		
	<p><u>CAB PAINT PRIMARY/LOWER COLOR</u></p>		
	<p>The primary/lower paint color shall be Sikkens FLNA 31979 Red.</p>		
	<p><u>CAB PAINT WARRANTY</u></p>		
	<p>Purchaser shall receive a Paint and Finish (Exterior Clear coated) Two (2) Year limited warranty in accordance with, and subject to, warranty certificate RFW0702. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.</p>		
	<p><u>CAB PAINT INTERIOR</u></p>		
	<p>The visible interior cab structure surfaces shall be painted with a multi-tone silver gray texture finish.</p>		

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		<u>CAB ENTRY DOORS</u>		
		<p>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.</p>		
		<p>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.</p>		
		<p>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.</p>		
		<u>CAB ENTRY DOOR TYPE</u>		
		<p>All cab entry doors shall be barrier clear design resulting in exposed lower cab steps. The doors shall provide approximately 32.00 inches of clearance from the ground to the bottom of the door so cab doors may be opened un-hindered by most obstacles encountered, such as guard rails along interstate highways.</p>		
		<p>Entry doors shall include Pollak mechanical plunger style switches for electrical component activation.</p>		
		<u>CAB INSULATION</u>		
		<p>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.</p>		
		<u>CAB STRUCTURAL WARRANTY</u>		
		<p>Purchaser shall receive a Cab Structure (Aluminum) Five (5) Years limited warranty in accordance with, and subject to, warranty certificate RFW0601. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.</p>		
		<u>CAB TEST INFORMATION</u>		
		<p>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 <u>COE Frontal Strength Evaluation Dynamic Loading Heavy Trucks</u>, Section 5 of SAE J2422 <u>Cab Roof Strength Evaluation Quasi -Static Loading Heavy Trucks</u> and ECE R29 <u>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.</u></p>		
		<p>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.</p>		
		<u>ELECTRICAL SYSTEM</u>		
		<p>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</p>		

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		retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.		
		<u>DATA RECORDING SYSTEM</u>		
		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:		
		<ul style="list-style-type: none"> • 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.		
		<u>LOAD MANAGEMENT SYSTEM</u>		
		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.		
		<u>ACCESSORY POWER</u>		
		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.		
		<u>EXTERIOR ELECTRICAL TERMINAL COATING</u>		
		All terminals exposed to the elements will be sprayed with a high visibility protective rubberized coating to prevent corrosion.		
		<u>ELECTRICAL SYSTEM WARRANTY</u>		
		Purchaser shall receive an Electrical System One (1) Year or 18,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0201. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.		
		<u>ENGINE</u>		
		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.		

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		<p>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.</p> <p>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.</p> <p>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.</p> <p><u>CAB ENGINE TUNNEL</u></p> <p>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.</p> <p><u>DIESEL PARTICULATE FILTER CONTROLS</u></p> <p>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.</p> <p><u>ENGINE PROGRAMMING HIGH IDLE SPEED</u></p> <p>The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.</p> <p><u>ENGINE HIGH IDLE CONTROL</u></p> <p>The vehicle shall be equipped with a high-idle speed rocker switch and an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output. This device shall operate only when the engine is running and the transmission is in neutral with the parking brake set. When automatically engaged the high idle shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake is released, or when the transmission is placed in neutral.</p> <p><u>ENGINE PROGRAMMING ROAD SPEED GOVERNOR</u></p> <p>The engine shall include programming which will govern the top speed of the vehicle.</p> <p><u>AUXILIARY ENGINE BRAKE</u></p> <p>A compression brake, for the six (6) cylinder engine shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine compression brake shall activate upon 0% accelerator when in operation mode and actuate the vehicle's brake lights.</p> <p>The engine shall utilize a variable geometry turbo (VGT) as an integrated auxiliary engine brake to offer a variable rate of exhaust flow, which when activated in conjunction with the compression brake shall enhance the engine's compression braking capabilities.</p> <p><u>AUXILIARY ENGINE BRAKE CONTROL</u></p>		

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		<p>An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:</p> <ul style="list-style-type: none"> • 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. <p>The compression brake shall be controlled through an on/off switch and a low/medium/high selector switch.</p>		
		<p><u>ELECTRONIC ENGINE OIL LEVEL INDICATOR</u></p> <p>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.</p>		
		<p><u>FLUID FILLS</u></p> <p>The engine oil, coolant, transmission, and power steering fluid fills shall be located under the cab. The windshield washer fill shall be accessible through the front left side mid step.</p>		
		<p><u>ENGINE DRAIN PLUG</u></p> <p>The engine shall include an original equipment manufacturer installed oil drain plug.</p>		
		<p><u>ENGINE WARRANTY</u></p> <p>The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.</p>		
		<p><u>REMOTE THROTTLE HARNESS</u></p> <p>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.</p>		
		<p><u>ENGINE PROGRAMMING REMOTE THROTTLE</u></p> <p>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.</p>		
		<p><u>ENGINE PROGRAMMING IDLE SPEED</u></p> <p>The engine low idle speed will be programmed at 700 rpm.</p>		
		<p><u>ENGINE AIR INTAKE</u></p>		

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S	<p>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.</p> <p>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.</p> <p>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.</p>		
	<p><u>ENGINE FAN DRIVE</u></p>		
	<p>The engine cooling system fan shall incorporate a thermostatically controlled, Horton fully variable type fan drive with SmartClutch J-1939 CAN controller.</p> <p>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.</p>		
	<p><u>ENGINE COOLING SYSTEM</u></p>		
	<p>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.</p> <p>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.</p> <p>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.</p> <p>The cooling system shall include a one piece injected molded polymer fan with a three (3) piece fiberglass fan shroud.</p> <p>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.</p>		

PART NO	S	DESCRIPTION	QTY	ID
		<p>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.</p> <p>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.</p> <p>The radiator and charge air cooler shall be removable through the bottom of the chassis.</p> <p><u>ENGINE COOLING SYSTEM PROTECTION</u></p> <p>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.</p> <p><u>ENGINE COOLANT</u></p> <p>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.</p> <p>Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.</p> <p><u>ELECTRONIC COOLANT LEVEL INDICATOR</u></p> <p>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.</p> <p><u>ENGINE PUMP HEAT EXCHANGER</u></p> <p>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.</p> <p><u>COOLANT HOSES</u></p> <p>The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include stainless steel constant torque band clamps.</p> <p><u>ENGINE COOLANT OVERFLOW BOTTLE</u></p> <p>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.</p> <p><u>ENGINE EXHAUST SYSTEM</u></p> <p>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</p>		

PART NO	DESCRIPTION	QTY	ID
	<p>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.</p> <p>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.</p> <p>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.</p> <p>The exhaust system after treatment module shall be mounted below the frame in the outboard position.</p>		
	<p><u>DIESEL EXHAUST FLUID TANK</u></p> <p>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 tank shall have a fill with splash guard on the battery box under the cab for access when the cab is tilted.</p> <p>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.</p>		
	<p><u>ENGINE EXHAUST ACCESSORIES</u></p> <p>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.</p>		
	<p><u>ENGINE EXHAUST WRAP</u></p> <p>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.</p> <p>The exhaust flex joint shall not include the thermal exhaust wrap.</p>		
	<p><u>EMISSIONS SYSTEMS WARRANTY</u></p> <p>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.</p>		
	<p><u>TRANSMISSION</u></p> <p>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.</p> <p>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.</p> <p>The transmission gear ratios shall be:</p>		

PART NO	S	DESCRIPTION	QTY	ID																																																
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		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																																																		
<u>TRANSMISSION MODE PROGRAMMING</u>																																																				
<p>The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.</p>																																																				
<u>TRANSMISSION FEATURE PROGRAMMING</u>																																																				
<p>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.</p>																																																				
<p>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.</p>																																																				
<p>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.</p>																																																				
<table border="0" style="width: 100%;"> <tr> <td colspan="2"><u>Function</u></td> <td colspan="2"><u>Description</u></td> </tr> <tr> <td colspan="4" style="text-align: center;"><u>Wire assignment</u></td> </tr> <tr> <td colspan="4">Inputs</td> </tr> <tr> <td>C</td> <td>PTO Request</td> <td></td> <td></td> </tr> <tr> <td>J</td> <td>Fire Truck Pump Mode (4th Lockup)</td> <td>122 /</td> <td></td> </tr> <tr> <td>123</td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4">Outputs</td> </tr> <tr> <td>C</td> <td>Range Indicator</td> <td></td> <td>145</td> </tr> <tr> <td>(4th)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>G</td> <td>PTO Enable Output</td> <td></td> <td>130</td> </tr> <tr> <td></td> <td>Signal Return</td> <td></td> <td></td> </tr> <tr> <td>103</td> <td></td> <td></td> <td></td> </tr> </table>					<u>Function</u>		<u>Description</u>		<u>Wire assignment</u>				Inputs				C	PTO Request			J	Fire Truck Pump Mode (4th Lockup)	122 /		123				Outputs				C	Range Indicator		145	(4th)				G	PTO Enable Output		130		Signal Return			103			
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<u>TRANSMISSION SHIFT SELECTOR</u>																																																				
<p>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</p>																																																				

PART NO	S	DESCRIPTION	QTY	ID
		specific maintenance function is required.		
		<u>TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE</u>		
		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.		
		<u>TRANSMISSION COOLING SYSTEM</u>		
		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.		
		<u>TRANSMISSION DRAIN PLUG</u>		
		The transmission shall include an original equipment manufacturer installed magnetic transmission fluid drain plug.		
		<u>TRANSMISSION WARRANTY</u>		
		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.		
		<u>PTO LOCATION</u>		
		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.		
		<u>DRIVELINE</u>		
		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.		
		<u>MIDSHIP PUMP / GEARBOX</u>		
		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.		
		<u>MIDSHIP PUMP / GEARBOX MODEL</u>		
		The midship pump/gearbox provisions shall be for a Hale QMAX pump.		
		<u>MIDSHIP PUMP GEARBOX DROP</u>		
		The Hale pump gearbox shall have an "L" (long) drop length.		
		<u>MIDSHIP PUMP RATIO</u>		
		The ratio for the midship pump shall be 2.28:1 (23).		
		<u>MIDSHIP PUMP LOCATION C/L SUCTION TO C/L REAR AXLE</u>		
		The midship pump shall be located so the dimension from the centerline of the suction to the centerline of the rear axle is 99.00 inches.		
		<u>PUMP SHIFT CONTROLS</u>		

PART NO	S	DESCRIPTION	QTY	ID
		<p>One (1) air pump shift control panel shall be located on the left hand side of the engine tunnel, integrated with the shifter pod. The following shall be provided on the panel: a three (3) position control lever; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline and shall include pump instructions. An instruction plate describing the transmission shift selector position used for pumping shall be provided and located so it can be read from the driver's position per NFPA 16.10.1.3. The road mode shall be selected when the control lever is in the forward position and pump mode shall be selected when the control lever is in the rearward position.</p> <p>The control lever center position shall exhaust air from both pump and road sides of the pump gear box shift cylinder.</p> <p><u>PUMP SHIFT CONTROL PLUMBING</u></p> <p>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.</p> <p><u>FUEL FILTER/WATER SEPARATOR</u></p> <p>The fuel system shall have a Fleetguard FS20121 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.</p> <p>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.</p> <p>A secondary fuel filter shall be included as approved by the engine manufacturer.</p> <p><u>FUEL LINES</u></p> <p>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.</p> <p><u>ELECTRIC FUEL PRIMER</u></p> <p>Integral to the engine assembly is an electric lift pump that serves the purpose of pre-filter fuel priming.</p> <p><u>FUEL TANK</u></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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</p>		

PART NO	S	DESCRIPTION	QTY	ID
		acceptable.		
		<u>FUEL TANK MATERIAL AND FINISH</u>		
		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.		
		<u>FUEL TANK STRAP MATERIAL</u>		
		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.		
		<u>FUEL TANK FILL PORT</u>		
		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.		
		<u>FUEL TANK DRAIN PLUG</u>		
		A 0.5 inch NPT magnetic drain plug shall be centered in the bottom of the fuel tank.		
		<u>FRONT AXLE</u>		
		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 21,500 pounds FAWR.		
		<u>FRONT WHEEL BEARING LUBRICATION</u>		
		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.		
		<u>FRONT SHOCK ABSORBERS</u>		
		Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.		
		The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.		
		The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability		

PART NO	S	DESCRIPTION	QTY	ID
		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.		
		<u>FRONT SUSPENSION</u>		
		The front suspension shall include a ten (10) leaf spring pack in which the longest leaf measures 54.00 inch long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.		
		<u>STEERING COLUMN/ WHEEL</u>		
		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, two (2) 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.		
		<u>ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR</u>		
		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.		
		<u>POWER STEERING PUMP</u>		
		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.		
		<u>FRONT AXLE CRAMP ANGLE</u>		
		The chassis shall have a front axle cramp angle of 48-degrees to the left and 44-degrees to the right.		
		<u>POWER STEERING GEAR</u>		
		The power steering gear shall be a TRW model TAS 65 with an assist cylinder.		
		<u>CHASSIS ALIGNMENT</u>		
		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.		
		<u>REAR AXLE</u>		
		The rear axle shall be a Meritor model RS-25-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a fire service rated capacity of 27,000 pounds.		
		The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.63 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.		
		The axle shall have heavy-duty Hypoid gearing for longer life, greater		

PART NO	S	DESCRIPTION	QTY	ID
		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.		
		<u>REAR AXLE DIFFERENTIAL LUBRICATION</u>		
		The rear axle differential shall be lubricated with oil.		
		<u>REAR WHEEL BEARING LUBRICATION</u>		
		The rear axle wheel bearings shall be lubricated with oil.		
		<u>REAR AXLE DIFFERENTIAL CONTROL</u>		
		A driver controlled differential lock shall be installed on the rear axle. This feature shall allow the main differential to be locked and unlocked when encountering poor road or highway conditions, where maximum traction is needed, for use at speeds no greater than 25 MPH. The differential lock shall be controlled by a locking rocker switch on the switch panel. The light on the switch shall illuminate with positive engagement of the differential control.		
		<u>VEHICLE TOP SPEED</u>		
		The top speed of the vehicle shall be approximately 68 MPH +/-2 MPH at governed engine RPM.		
		<u>REAR SUSPENSION</u>		
		The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type conventional multi-leaf spring suspension, with 57.50 inch X 3.00 inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided.		
		The rear suspension capacity shall be rated from 21,000 to 31,500 pounds.		
		<u>TIRE INTERMITTENT SERVICE RATING</u>		
		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.		
		<u>FRONT TIRE</u>		
		The front tires shall be Michelin 425/65R-22.5 20PR "L" tubeless radial XZY3 mixed service tread.		
		The front tire stamped load capacity shall be 22,800 pounds per axle with a nominal speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.		
		The Michelin Intermittent Service Rating maximum load capacity shall be 24,396 pounds per axle with a maximum speed of 65 miles per hour when properly inflated to 120 pounds per square inch.		
		The Michelin Intermittent Service Rating maximum speed capacity shall be 22,800 pounds per axle with a speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.		
		The 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.		

PART NO	S	DESCRIPTION	QTY	ID
		<p><u>REAR TIRE</u></p> <p>The rear tires shall be Michelin 12R-22.5 16PR "H" tubeless radial XDN2 all-weather tread.</p> <p>The rear tire stamped load capacity shall be 27,120 pounds per axle with a nominal speed rating of 75 miles per hour when properly inflated to 120 pounds per square inch.</p> <p>The Michelin Intermittent Service Rating maximum load capacity shall be 29,020 pounds per axle with a maximum speed of 75 miles per hour when properly inflated to 120 pounds per square inch.</p> <p>The Michelin Intermittent Service Rating maximum speed capacity shall match the nominal speed rating.</p> <p>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.</p>		
		<p><u>REAR AXLE RATIO</u></p> <p>The rear axle ratio shall be 5.13:1.</p>		
		<p><u>TIRE PRESSURE INDICATOR</u></p> <p>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.</p>		
		<p><u>FRONT WHEEL</u></p> <p>The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch aluminum wheels featuring a mirror polish on the outer face. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.</p>		
		<p><u>REAR WHEEL</u></p> <p>The outer rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch aluminum wheels with a mirror polished outer surface. The inner rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch aluminum wheels with bright machine finish. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.</p>		
		<p><u>BRAKE SYSTEM</u></p> <p>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.</p> <p>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.</p> <p>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.</p>		

PART NO	DESCRIPTION	QTY	ID
	<p>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.</p> <p>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.</p> <p>A momentary rocker style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light and the light on the rocker switch shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.</p> <p>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.</p>		
	<p><u>FRONT BRAKES</u></p> <p>The front brakes shall be Meritor 16.50 inch x 6.00 inch S-cam drum type.</p>		
	<p><u>REAR BRAKES</u></p> <p>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.</p>		
	<p><u>PARK BRAKE</u></p> <p>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.</p>		
	<p><u>PARK BRAKE CONTROL</u></p> <p>A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake.</p> <p>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.</p>		
	<p><u>FRONT BRAKE SLACK ADJUSTERS</u></p> <p>The front brakes shall include Meritor automatic slack adjusters installed on the chassis which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.</p>		
	<p><u>REAR BRAKE SLACK ADJUSTERS</u></p>		

PART NO	S	DESCRIPTION	QTY	ID
		<p>The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.</p>		
		<p><u>AIR DRYER</u></p>		
		<p>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.</p>		
		<p><u>FRONT BRAKE CHAMBERS</u></p>		
		<p>The front brakes shall be provided with MGM type 30 brake chambers.</p>		
		<p><u>REAR BRAKE CHAMBERS</u></p>		
		<p>The rear axle shall include TSE 30/36 brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 36 brake chamber has a 36.00 square inch effective area.</p>		
		<p><u>AIR COMPRESSOR</u></p>		
		<p>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.</p>		
		<p><u>AIR GOVERNOR</u></p>		
		<p>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.</p>		
		<p><u>MOISTURE EJECTORS</u></p>		
		<p>Manual pet-cock type drain valves shall be installed on all reservoirs of the air supply system.</p>		
		<p><u>AIR SUPPLY LINES</u></p>		
		<p>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.</p>		
		<p>Push to connect type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.</p>		
		<p><u>WHEELBASE</u></p>		
		<p>The chassis wheelbase shall be 180.00 inches.</p>		

PART NO	S	DESCRIPTION	QTY	ID
		<u>REAR OVERHANG</u>		
		The chassis rear overhang shall be 47.00 inches.		
		<u>FRAME</u>		
		The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.		
		Proposals calculating the frame strength using the "box method" shall not be considered.		
		Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.		
		A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The bolt heads shall be flanged type, held in place by distorted thread flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.		
		Any proposals not including additional reinforcement for each cross member shall not be considered.		
		All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.		
		<u>FRAME PAINT</u>		
		The frame rails shall be hot dip galvanized prior to assembly and attachment of any components. The components that shall be galvanized shall include:		
		<ul style="list-style-type: none"> • 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:		
		<ul style="list-style-type: none"> • 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 		

PART NO	S	DESCRIPTION	QTY	ID
		<ul style="list-style-type: none"> • 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:		
		<ul style="list-style-type: none"> • Suspension components • Front and rear axles 		
		All powder coatings, primers and paint used on the non-galvanized components shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-cured pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils.		
		<u>FRAME ASSEMBLY STRUCTURAL</u>		
		Purchaser shall receive a Frame Assembly Structural Five (5) Years limited warranty in accordance with, and subject to, warranty certificate RFW0301. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.		
		<u>FRAME RAIL CORROSION</u>		
		Purchaser shall receive a Frame Rail Corrosion (Zinc Plate and Powder Coat) Ten (10) Years or 75,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0317. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.		
		<u>FRAME COMPONENTS CORROSION</u>		
		Purchaser shall receive a Frame Components Corrosion (Powder Coat) Two (2) Years or 36,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0319. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.		
		<u>FRONT BUMPER</u>		
		A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12.00 inches high and 99.00 inches wide.		
		<u>FRONT BUMPER EXTENSION LENGTH</u>		
		The front bumper shall be extended approximately 6.00 inches ahead of the cab.		
		<u>FRONT BUMPER APRON</u>		
		The 6.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.		
		The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.		
		<u>AIR HORN</u>		
		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		

PART NO	S	DESCRIPTION	QTY	ID
		finish deep inside the trumpet.		
		<u>AIR HORN LOCATION</u>		
		The air horns shall be recess mounted in the front bumper face, one (1) on the right side of the bumper in the inboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the inboard position relative to the left hand frame rail.		
		<u>AIR HORN RESERVOIR</u>		
		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.		
		<u>ELECTRONIC SIREN SPEAKER</u>		
		There shall be one (1) Federal Signal Inc. Dynamax® model ES100C, 100 watt speaker provided. The speaker shall measure 5.90 inches tall X 5.50 inches wide X 2.30 inches deep. The speaker shall include a Federal Signal "Electric F" style grille which shall measure 6.61 inches tall X 6.78 inches wide.		
		<u>ELECTRONIC SIREN SPEAKER LOCATION</u>		
		The electronic siren speaker shall be located on the front bumper face on the right side outboard of the frame rail in the far outboard position.		
		<u>FRONT BUMPER TOW HOOKS</u>		
		Two (2) heavy duty tow hooks, painted to match the frame components, shall be installed behind the front bumper in the forward position, bolted directly to the side of each chassis frame rail with grade 8 bolts.		
		<u>CAB TILT SYSTEM</u>		
		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.		
		<u>CAB TILT CONTROL RECEPTACLE</u>		

PART NO	DESCRIPTION	QTY	ID
	<p>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.</p>		
	<p>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.</p>		
	<p><u>CAB TILT LOCK DOWN INDICATOR</u></p>		
	<p>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.</p>		
	<p>In addition to the alert message an audible alarm shall sound when the cab is unlocked and ajar with the parking brake released.</p>		
	<p><u>CAB WINDSHIELD</u></p>		
	<p>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.</p>		
	<p>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.</p>		
	<p>Each windshield shall be installed using black self locking window rubber.</p>		
	<p><u>GLASS FRONT DOOR</u></p>		
	<p>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.</p>		
	<p>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.</p>		
	<p>The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.</p>		
	<p><u>GLASS TINT FRONT DOOR</u></p>		
	<p>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.</p>		
	<p><u>GLASS REAR DOOR RH</u></p>		
	<p>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.</p>		
	<p><u>GLASS TINT REAR DOOR RIGHT HAND</u></p>		
	<p>The window located in the right hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light</p>		

PART NO	S	DESCRIPTION	QTY	ID
		transmittance.		
		<u>GLASS REAR DOOR LH</u>		
		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.		
		<u>GLASS TINT REAR DOOR LEFT HAND</u>		
		The window located in the left hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.		
		<u>GLASS SIDE MID RH</u>		
		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.		
		<u>GLASS TINT SIDE MID RIGHT HAND</u>		
		The window located on the right hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.		
		<u>GLASS SIDE MID LH</u>		
		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.		
		<u>GLASS TINT SIDE MID LEFT HAND</u>		
		The window located on the left hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.		
		<u>CLIMATE CONTROL</u>		
		The cab shall include a 57,500 BTU @ 425 CFM front overhead heater/defroster which shall be provided and installed above the windshield between the sun visors.		
		The cab shall also include a combination heater air-conditioning unit mounted on the engine tunnel. This unit shall offer eight (8) adjustable louvers, four (4) forward facing and four (4) rearward facing, a temperature control valve and two (2) blowers offering three (3) speeds which shall be capable of circulating 550 cubic feet of air per minute. The unit shall be rated for 42,500 BTU/Hr of cooling and 36,000 BTU/Hr of heating.		
		All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.		
		The air conditioner lines shall be a mixture of custom bend zinc coated steel fittings and Aeroquip flexible hose with Aeroquip EZ clip fittings.		
		<u>CLIMATE CONTROL DRAIN</u>		

PART NO	S	DESCRIPTION	QTY	ID
		<p>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.</p>		
		<p><u>CLIMATE CONTROL ACTIVATION</u></p>		
		<p>The heating and defrosting controls shall be located on the front overhead climate control unit. There shall be additional heating and air conditioning controls located on the engine tunnel mounted climate control unit.</p>		
		<p><u>A/C CONDENSER LOCATION</u></p>		
		<p>A roof mounted A/C condenser shall be installed centered on the cab forward of the raised roof against the slope rise.</p>		
		<p><u>A/C COMPRESSOR</u></p>		
		<p>The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32,000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.</p>		
		<p><u>UNDER CAB INSULATION</u></p>		
		<p>The underside of the cab tunnel surrounding the engine shall be lined with multi-layer insulation, engineered for application inside diesel engine compartments.</p>		
		<p>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.</p>		
		<p>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.</p>		
		<p>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.</p>		
		<p><u>INTERIOR TRIM FLOOR</u></p>		
		<p>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.</p>		
		<p><u>INTERIOR TRIM</u></p>		
		<p>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.</p>		
		<p><u>REAR WALL INTERIOR TRIM</u></p>		
		<p>The rear wall of the cab shall be trimmed with vinyl.</p>		
		<p><u>HEADER TRIM</u></p>		
		<p>The cab interior shall feature header trim over the driver and officer dash constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.</p>		

PART NO	S	DESCRIPTION	QTY	ID
		<u>TRIM CENTER DASH</u>		
		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.	0.13	
		<u>TRIM LH DASH</u>		
		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.		
		<u>TRIM RH DASH</u>		
		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.	5.88	
		<u>ENGINE TUNNEL TRIM</u>		
		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.		
		<u>STEP TRIM</u>		
		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.		
		<u>INTERIOR DOOR TRIM</u>		
		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.		
		<u>CAB DOOR TRIM REFLECTIVE</u>		
		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.		
		<u>INTERIOR GRAB HANDLE "A" PILLAR</u>		
		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.		

PART NO	S	DESCRIPTION	QTY	ID
		<u>INTERIOR GRAB HANDLE FRONT DOOR</u>		
		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.		
		<u>INTERIOR GRAB HANDLE REAR DOOR</u>		
		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.		
		<u>INTERIOR SOFT TRIM COLOR</u>		
		The cab interior soft trim surfaces shall be gray in color.		
		<u>INTERIOR TRIM SUNVISOR</u>		
		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.		
		<u>INTERIOR FLOOR MAT COLOR</u>		
		The cab interior floor mat shall be gray in color.		
		<u>CAB PAINT INTERIOR DOOR TRIM</u>		
		The inner door panel surfaces shall be painted with multi-tone silver gray texture finish.		
		<u>HEADER TRIM INTERIOR PAINT</u>		
		The metal surfaces in the header area shall be coated with multi-tone silver gray texture finish.		
		<u>TRIM CENTER DASH INTERIOR PAINT</u>		
		The entire center dash shall be coated with multi-tone silver gray texture finish. Any accessory pods attached to the dash shall also be painted this color.		
		<u>TRIM LH DASH INTERIOR PAINT</u>		
		The left hand dash shall be painted with a multi-tone silver gray texture finish.		
		<u>TRIM RIGHT HAND DASH INTERIOR PAINT</u>		
		The right hand dash shall be painted with multi-tone silver gray texture finish.		
		<u>DASH PANEL GROUP</u>		
		The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be within comfortable reach of both the driver and officer.		
		<u>SWITCHES CENTER PANEL</u>		
		The center dash panel shall include twelve (12) rocker switch positions in a single row across the top of the panel.		
		A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The		

PART NO	S	DESCRIPTION	QTY	ID
		<p>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.</p> <p><u>SWITCHES LEFT PANEL</u></p> <p>The left dash panel shall include eight (8) switches. There shall be six (6) switches across the top of the panel and two (2) staggered on the left hand portion of the panel. Five (5) of the top row of switches shall be rocker type and the left one (1) shall be the headlight switch. The remaining switches shall consist of one (1) windshield wiper/washer control switch and one (1) instrument lamp dimmer switch.</p> <p>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.</p> <p><u>SWITCHES RIGHT PANEL</u></p> <p>The right dash panel shall include no rocker switches or legends.</p> <p><u>SEAT BELT WARNING</u></p> <p>A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall activate a digital seat position indicator with a seat position legend and integrated audible alarm in the switch panel.</p> <p>The warning system shall activate when any seat is occupied with a minimum of 60 pounds and the corresponding seat belt remains unfastened. The warning system shall also activate when any seat is occupied and the corresponding seat belt was fastened in an incorrect sequence. Once activated, the visual indicators and applicable audible alarm shall remain active until all occupied seats have the seat belts fastened.</p> <p><u>SEAT MATERIAL</u></p> <p>The USSC Valor seats shall include military grade high strength, wear resistant fabric made of durable ballistic polyester. A synthetic 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. The fabric shall include the integration VALORTech XD®, a proprietary antimicrobial agent, designed to resist toxicity and contaminants.</p> <p><i>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.</i></p> <p><u>SEAT COLOR</u></p> <p>All seats supplied with the chassis shall be gray in color. All seats shall include red seat belts.</p> <p><u>SEAT BACK LOGO</u></p> <p>The seat back shall include the “FERRARA FIRE APPARATUS” logo. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.</p> <p><u>SEAT DRIVER</u></p> <p>The driver's seat shall be a USSC Valor P1A air suspension. The four-way seat shall feature a 3.00 inches vertical travel air suspension and manual fore</p>		

PART NO	DESCRIPTION	QTY	ID
	<p>and aft adjustment with 6.00 inches of travel. The suspension control shall be located on the seat below the front of the cushion. The seat shall also feature integral springs to isolate shock.</p> <p>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.</p> <p>This model of seat shall have successfully completed the static load tests set forth by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.</p> <p>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.</p>		
	<p><u>SEAT BACK DRIVER</u></p> <p>The driver's seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.</p>		
	<p><u>SEAT MOUNTING DRIVER</u></p> <p>The driver's seat shall be installed in an ergonomic position in relation to the cab dash.</p>		
	<p><u>SEAT OFFICER</u></p> <p>The officer's seat shall be a USSC Valor ABTS Crew series. The seat shall feature an 18.00 inches wide padded seat cushion. The seat shall be mounted in a fixed position. The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.</p> <p>The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00.</p> <p>This model of seat shall have successfully completed the static load tests set forth by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.</p> <p>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.</p>		
	<p><u>SEAT BACK OFFICER</u></p> <p>The officer's seat shall include a seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a blank cavity for a customer installed Self Contained Breathing Apparatus (SCBA) bracket. The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.</p>		
	<p><u>SEAT MOUNTING OFFICER</u></p> <p>The officer's seat shall be installed in an ergonomic position in relation to the cab dash.</p>		

PART NO	S	DESCRIPTION	QTY	ID
		<u>SEAT BELT ORIENTATION CREW</u>		
		The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip. The seat belts shall include Ready Reach belt extenders to present belt over shoulder.		
		<u>SEAT REAR FACING OUTER LOCATION</u>		
		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.		
		<u>SEAT CREW REAR FACING OUTER</u>		
		The crew area shall include a seat in the rear facing outboard position which shall be a USSC Valor ABTS Crew series. The seat shall feature an 18.00 inches wide padded seat cushion. The seat shall be mounted in a fixed position.		
		The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.		
		The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.		
		This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. 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.		
		<u>SEAT BACK REAR FACING OUTER</u>		
		Each seat in the rear facing outer position shall include a seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a blank cavity for a customer installed Self Contained Breathing Apparatus (SCBA) bracket. The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.		
		<u>SEAT MOUNTING REAR FACING OUTER</u>		
		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.		
		<u>SEAT FORWARD FACING CENTER LOCATION</u>		
		The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.		
		<u>SEAT CREW FORWARD FACING CENTER</u>		
		The crew area shall include a seat in the forward facing center position which shall be a USSC Valor ABTS Crew series. The seat shall feature an 18.00 inches wide padded seat cushion. The seat and cushion shall be hinged and compact in design for additional room and shall remain in the stored position until occupied.		

PART NO	S	DESCRIPTION	QTY	ID
		<p>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.</p>		
		<p>The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.</p>		
		<p>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. 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.</p>		
		<p><u>SEAT BACK FORWARD FACING CENTER</u></p>		
		<p>Each seat in the forward facing center position shall include a seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a blank cavity for a customer installed Self Contained Breathing Apparatus (SCBA) bracket. The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.</p>		
		<p><u>SEAT FRAME FORWARD FACING</u></p>		
		<p>The forward facing center seating positions shall include an enclosed seat frame located and installed on the rear wall. The seat frame shall measure 42.38 inches wide X 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of Marine Grade 5052-H32 0.19 inch thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.</p>		
		<p><u>SEAT FRAME FORWARD FACING STORAGE ACCESS</u></p>		
		<p>There shall be two (2) access points on the side of the storage area, one (1) on the driver side and one (1) on the officer side.</p>		
		<p><u>SEAT MOUNTING FORWARD FACING CENTER</u></p>		
		<p>The forward facing center seats shall be installed facing the front of the cab.</p>		
		<p><u>WINDSHIELD WIPER SYSTEM</u></p>		
		<p>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.</p>		
		<p><u>ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR</u></p>		
		<p>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.</p>		
		<p><u>CAB DOOR HARDWARE</u></p>		
		<p>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.</p>		

PART NO	S	DESCRIPTION	QTY	ID
		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.		
		<u>DOOR LOCKS</u>		
		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.		
		<u>GRAB HANDLES</u>		
		The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of SAE 304 stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.		
		<u>REARVIEW MIRRORS</u>		
		Retrac West Coast style single vision mirror heads model 1171H shall be provided and installed on each of the front cab doors. The mirrors shall be mounted to the cab doors with tubular stainless steel swing away arms and the mirror heads shall be center mounted on the arms to provide rigid mounting to reduce vibration.		
		The flat mirrors shall measure 7.00 inches wide x 16.00 inches high. A separate lower 8.00 inch round manually adjustable convex mirror model 980-4 shall be provided below the flat mirror for a wider field of vision. The mirror glass shall be held in a plastic housing with a stainless steel back. The mirrors shall be manufactured with the finest quality non-glare glass.		
		The flat mirrors shall be remotely adjustable vertically and horizontally via four way actuation switches. The control switches shall be mounted in the cab with in easy reach of the driver. The flat mirrors shall be heated for defrosting in cold weather conditions.		
		<u>REARVIEW MIRROR HEAT SWITCH</u>		
		The heat for the rearview mirrors shall be controlled through a rocker switch on the dash in the switch panel.		
		<u>CAB FENDER</u>		
		Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of rubber.		
		<u>CAB EXTERIOR FRONT & SIDE EMBLEMS</u>		
		The cab shall include one (1) Spartan emblem installed on the front air intake grille.		
		<u>IGNITION</u>		
		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		

PART NO	S	DESCRIPTION	QTY	ID
		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.		
		<u>BATTERY</u>		
		The single start electrical system shall include three (3) Harris BCI 31 925 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541.		
		<u>BATTERY TRAY</u>		
		The batteries shall be installed on a steel battery tray located on the left side of the chassis, securely bolted to the frame rails. The battery tray shall be coated with the same material as the frame.		
		The battery tray 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 tray 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.		
		<u>BATTERY BOX COVER</u>		
		The battery box shall include a steel cover which protects the top of the batteries on the left hand side of the vehicle. The cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.		
		<u>BATTERY CABLE</u>		
		The starting system shall include cables which shall be protected by 275 degree F. minimum high temperature flame retardant loom, sealed at the ends with heat shrink and sealant.		
		The battery terminals shall not be utilized for auxiliary connections. The only acceptable auxiliary connections shall be for the cross over link from the left bank to the right bank, power for jumper studs and starter cables. All other auxiliary connections will use remote studs mounted in the battery box area. There shall be four (4) remote studs labeled as Common Power, Common Ground, Clean Power, and Clean Ground.		
		<u>BATTERY JUMPER STUD</u>		
		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.		
		<u>ALTERNATOR</u>		
		The charging system shall include a 320 amp Leece-Neville 12 volt alternator. The alternator shall include a self-exciting integral regulator.		
		<u>STARTER MOTOR</u>		
		The single start electrical system shall include a Delco brand starter motor.		
		<u>BATTERY CONDITIONER</u>		
		A Kussmaul Auto Charge 40 LPC battery conditioner shall be supplied. The battery conditioner shall provide a 40 amp output for the chassis batteries and a 15 amp output circuit for accessory loads. The battery conditioner shall be mounted in the cab in the LH rear facing outer seating position.		

PART NO	S	DESCRIPTION	QTY	ID
		<p><u>BATTERY CONDITIONER DISPLAY</u></p> <p>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.</p>		
		<p><u>ELECTRICAL INLET LOCATION</u></p> <p>An electrical inlet shall be installed on the left hand side of cab over the wheel well.</p>		
		<p><u>ELECTRICAL INLET</u></p> <p>A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.</p> <p>A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.</p> <p><u>Amp Draw Reference List:</u> <i>Kussmaul 40 LPC Charger - 5 Amps</i> <i>Kussmaul 40/20 Charger - 8.5 Amps</i> <i>Kussmaul 80 LPC Charger - 13 Amps</i> <i>Kussmaul EV-40 - 6.2 Amps</i> <i>Blue Sea P12 7532 - 7.5 Amps</i> <i>Iota DLS-45/IQ4 - 11 Amps</i> <i>1000W Engine Heater - 8.33 Amps</i> <i>1500W Engine Heater - 12.5 Amps</i> <i>120V Air Compressor - 4.2 Amps</i> <i>120V Dometic HVAC - 15 Amps</i></p>		
		<p><u>ELECTRICAL INLET CONNECTION</u></p> <p>The electrical inlet shall be connected to the battery conditioner.</p>		
		<p><u>ELECTRICAL INLET COLOR</u></p> <p>The electrical inlet connection shall include a yellow cover.</p>		
		<p><u>HEADLIGHTS</u></p> <p>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.</p>		
		<p><u>FRONT TURN SIGNALS</u></p> <p>The front fascia shall include two (2) Techniq model K60 4.00 inch X 6.00 inch amber LED sequential arrow turn signals which shall be installed in an outboard position within the front fascia chrome bezel.</p>		
		<p><u>HEADLIGHT LOCATION</u></p> <p>The headlights shall be located on the front fascia of the cab directly below the front warning lights.</p>		
		<p><u>SIDE TURN/MARKER LIGHTS</u></p> <p>The sides of the cab shall include two (2) Tecniq S170 LED side marker lights which shall be provided just behind the front cab radius corners. The lights shall be amber with chrome bezels.</p>		
		<p><u>MARKER AND ICC LIGHTS</u></p> <p>In accordance with FMVSS, there shall be five (5) Tecniq S170 LED cab marker lamps designating identification, center and clearance provided.</p>		

PART NO	S	DESCRIPTION	QTY	ID
		<p>These lights shall be installed on the face of the cab within full view of other vehicles from ground level. The lights shall be amber with chrome bezels.</p> <p><u>HEADLIGHT AND MARKER LIGHT ACTIVATION</u></p> <p>The headlights and marker lights shall be controlled through a rocker switch within easy reach of the driver. There shall be a dimmer switch within easy reach of the driver to adjust the brightness of the dash lights. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights when the ignition switch is in the "On" position and the parking brake is released.</p> <p><u>LIGHTBAR SWITCH</u></p> <p>The light bar shall be controlled by a rocker switch located on the switch panel. This switch shall be clearly labeled for identification.</p> <p><u>INTERIOR OVERHEAD LIGHTS</u></p> <p>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.</p> <p><u>INTERIOR OVERHEAD LIGHTS ACTIVATION</u></p> <p>The clear portion of each lamp shall be activated by opening the respective door.</p> <p><u>LIGHTBAR PROVISION</u></p> <p>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.</p> <p><u>CAB FRONT LIGHTBAR</u></p> <p>The lightbar provisions shall be for one (1) NFPA compliant Federal Signal brand Navigator LED lightbar mounted centered on the front of the cab roof. The lightbar shall be 73.00 inches in length. The lightbar shall feature eight (8) red LED lights and four (4) clear LED lights. The clear lights shall be disabled with park brake engaged. The cable shall exit the lightbar on the right side of the cab.</p> <p><u>FRONT SCENE LIGHTS</u></p> <p>The front of the cab shall include one (1) HiViz model FireTech FT-B-72 LED scene light installed on the brow of the cab.</p> <p>The housing shall be powder coated black.</p> <p><u>FRONT SCENE LIGHT LOCATION</u></p> <p>There shall be one (1) scene light mounted center on the front brow of the cab.</p> <p><u>FRONT SCENE LIGHTS ACTIVATION</u></p> <p>The front scene lighting shall be activated by individual rocker switches for each of the three (3) separate scene lighting circuits. Each circuit shall be activated independently and shall include rocker switches labeled "Front Scene", "Front Flood", and "Front Spotlight".</p>		

PART NO	S	DESCRIPTION	QTY	ID
		<u>GROUND LIGHTS</u>		
		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.		
		<u>GROUND LIGHTS</u>		
		The ground lighting shall be activated when the parking brake is set.		
		<u>LOWER CAB STEP LIGHTS</u>		
		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.		
		<u>INTERMEDIATE STEP LIGHTS</u>		
		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.		
		<u>ENGINE COMPARTMENT LIGHT</u>		
		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.		
		<u>DO NOT MOVE APPARATUS LIGHT</u>		
		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.		
		<u>MASTER WARNING SWITCH</u>		
		A master switch shall be included in the main rocker switch panel. The switch shall be a rocker type, red in color and labeled "Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switch left in the "ON" position shall automatically power up when the master switch is activated.		
		<u>INBOARD FRONT WARNING LIGHTS</u>		
		The cab front fascia shall include two (2) Federal Signal Quadra Flare LED front warning lights in the left and right inboard positions. The lights shall feature advanced Solaris technology and include a built in flasher capable of multiple flash patterns. The lights shall be mounted to the front fascia of the cab within a chrome bezel.		
		<u>INBOARD FRONT WARNING LIGHTS COLOR</u>		

PART NO	S	DESCRIPTION	QTY	ID
		The warning lights mounted on the cab front fascia in the inboard positions shall be red with a clear lens.		
		<u>FRONT WARNING SWITCH</u>		
		The front warning lights shall be controlled via rocker switch on the panel. This switch shall be clearly labeled for identification.		
		<u>INTERSECTION WARNING LIGHTS</u>		
		The chassis shall include two (2) Federal Signal Quadra Flare 6x4 LED intersection warning lights, one (1) each side. The lights shall feature advanced Solaris technology and a built in flasher with multiple flash patterns including steady burn.		
		<u>INTERSECTION WARNING LIGHTS COLOR</u>		
		The intersection lights shall be red with a clear lens.		
		<u>INTERSECTION WARNING LIGHTS LOCATION</u>		
		The intersection lights shall be mounted on the side of the bumper in the rearward position.		
		<u>SIDE AND INTERSECTOR WARNING SWITCH</u>		
		The side and intersector warning lights shall be controlled by a rocker switch on the switch panel. This switch shall be clearly labeled for identification.		
		<u>SIREN CONTROL HEAD</u>		
		A Federal PA300 electronic siren control head shall be provided. The siren head shall be a model 690010 and shall feature 200-watt output, high-low tone, and a built-in noise cancelling microphone. The siren shall to be mounted to protrude through the center panel of the cab dash in the lower section of the panel just left of the center of the panel.		
		<u>STEERING WHEEL HORN BUTTON SELECTOR SWITCH</u>		
		A rocker switch shall be installed in the switch panel between the driver and officer to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMCSA requirements.		
		<u>AUDIBLE WARNING RH FOOT SWITCH</u>		
		A foot switch wired to actuate the air horn(s) shall be supplied for installation in the front section of the cab for officer actuation.		
		<u>AIR HORN FOOT SWITCH RH</u>		
		The air horn foot switch shall be a Linemaster model 491-S.		
		<u>AIR HORN FOOT SWITCH RH LOCATION</u>		
		The air horn foot switch shall be temporarily tied up with a coiled wire drop at the firewall inboard for installation by the customer on the right hand side accessible to the officer.		
		<u>BACK-UP ALARM</u>		
		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.		
		<u>INSTRUMENTATION</u>		

PART NO	S	DESCRIPTION	QTY	ID
		<p>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.</p>		
		<p>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.</p>		
		<p>The instrument panel shall contain the following gauges:</p>		
		<p>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.</p>		
		<p>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.</p>		
		<p>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.</p>		
		<p>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:</p>		
		<p>RED INDICATORS</p>		
		<p>Stop Engine - indicates critical engine fault</p>		
		<p>Air Filter Restricted - indicates excessive engine air intake restriction</p>		
		<p>Park Brake - indicates parking brake is set</p>		
		<p>Seat Belt - indicates a seat is occupied and corresponding seat belt remains unfastened</p>		
		<p>Low Coolant - indicates critically low engine coolant</p>		
		<p>Cab Tilt Lock - indicates the cab tilt system locks are not engaged.</p>		

PART NO	S	DESCRIPTION	QTY	ID
		<p><u>AMBER INDICATORS</u> 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.</p>		
		<p><u>GREEN INDICATORS</u> 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</p>		
		<p><u>BLUE INDICATORS</u> High Beam indicator</p>		
		<p><u>AUDIBLE ALARMS</u> 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</p>		
		<p><u>BACKLIGHTING COLOR</u> The instrumentation gauges and the switch panel legends shall be backlit using red LED backlighting.</p>		
		<p><u>CAMERA REAR</u> 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</p>		

PART NO	S	DESCRIPTION	QTY	ID
		<p>driver. The rear camera display shall activate when the vehicle's transmission is placed in reverse.</p>		
		<p><u>CAMERA DISPLAY</u></p>		
		<p>The camera system shall be wired to a 7.00 inch flip down HD monitor which shall include a color display and day and night brightness modes installed above the driver position.</p>		
		<p><u>COMMUNICATION ANTENNA</u></p>		
		<p>An antenna base, for use with an NMO type antenna, shall be mounted on the right hand front corner of the cab roof so not to interfere with light bars or other roof mounted equipment installed by 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 17.00 foot of RG58 A/U cable with no connector at the radio end of the cable. The antenna base design provides the most corrosion resistance and best power transfer available from a high temper all brass construction and gold plated contact design. The antenna base shall be chassis builder supplied.</p>		
		<p><u>COMMUNICATION ANTENNA CABLE ROUTING</u></p>		
		<p>The antenna cable shall be routed from the antenna base mounted on the roof to the area inside the center rocker switch console.</p>		
		<p><u>CAB EXTERIOR PROTECTION</u></p>		
		<p>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.</p>		
		<p><u>FIRE EXTINGUISHER</u></p>		
		<p>A 2.50 pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.</p>		
		<p><u>DOOR KEYS</u></p>		
		<p>The cab and chassis shall include a total of four (4) door keys for the manual door locks.</p>		
		<p><u>WARRANTY</u></p>		
		<p>Purchaser shall receive a Custom Chassis One (1) Year or 18,000 Miles limited warranty in accordance with, and subject to, warranty certificate RFW0101. The warranty certificate is incorporated by reference into this proposal, and included with this proposal or available upon request.</p>		
		<p><u>CHASSIS OPERATION MANUAL</u></p>		
		<p>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.</p>		
		<p><u>ENGINE AND TRANSMISSION OPERATION MANUALS</u></p>		
		<p>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</p>		
		<p><u>CAB/CHASSIS AS BUILT WIRING DIAGRAMS</u></p>		
		<p>The cab and chassis shall include two (2) digital copies of wiring schematics and</p>		

PART NO	S	DESCRIPTION	QTY	ID
		option wiring diagrams.		
		<u>PAINT CONFIRMATION</u>		
		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.		
		<u>SALES TERMS</u>		
		The sale of the chassis shall be governed by the terms contained on the Sales Terms – Acceptance of Purchase Order document, a copy of which is attached to this option.		
		<u>DRIVELINE LAYOUT CONFIRMATION</u>		
		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.		
10-H4-1830		Fire Pump Installation (Spartan Chassis Only)	1	FE
		== Pump Enclosure - Side Mount - 622.001 06/06/22 ==		FE
20-A2-0220		Pump Module - Side Mounted Extruded / Modular	1	FE
20-A4-2220		Separate Pump Module - Extruded / Modular	1	FE
20-A4-4020		Trim - Dunnage Area, Tread Plate	1	FE
20-C2-0620		Pump Panels - Brush Stainless Steel	1	FE
20-C6-1020		Pump Panel - Fully Hinged, Right Side	1	FE
20-C6-2020		Access Panel - Front Pump Module w/Door	1	FE
20-D6-0220		Light - Left Side Pump Panel, LED Strip	1	FE
20-D6-1220		Light - Right Side Pump Panel, LED Strip	1	FE
20-D8-0620		Light - Pump Compartment, LED	1	FE
20-F2-1820		Steps - Intermediate Pump Panel, Left/Right Side	1	FE
20-F4-0420		Running Boards - Aluminum Tread Plate, Left & Right Side	1	FE
20-G4-2220		Handrails (2) - Above Dunnage Area, 12" Knurled Aluminum	1	FE
20-H4-0820		Switch - Air Horn, Pump Panel	1	FE
20-J2-0220		Gauges - Master Suction/Pressure, 4-1/2" Metal Face	1	FE
20-J4-1620		Pressure Governor - FRC Pump Boss PBA400-A00	1	FE
20-J4-4020		Return Line - Fill Subsurface	1	FE
20-J6-0220		Gauges - 2-1/2" Pressure, White Face	1	FE
20-J6-6020		Gauge Bezels - Chrome	1	FE
20-M4-0220		Tags - Pump Panel, Color Coded (Metal)	1	FE
		PUMP / COMPONENTS / ACCESSORIES		FE
22-A2-0420	>	Pump System - 1250-2000 GPM Single Stage, Hale QMAX	1	FE
22-F2-0220		Packing Glands - Hale	1	FE
22-G2-0420	U <	Manual Override - Pump Shift	1	
		A pump shift manual override installed on the lower left pump panel providing a method of engaging the pump in the event of a failure of the powered pump shift.		
		<u>MANUAL OVERRIDE. PUMP SHIFT</u>		
22-J8-0820	>	Primer - Automatic Air, Trident 31.001.0 (1250+ GPM)	1	FE
22-M2-0220		Anodes - Pump Corrosion (Each)	2	FE
22-P2-0220		Valve - Master Pump Drain	1	FE
22-P2-1420		Valve - Individual Drain, 3/4" Lift Up Type	1	FE
22-R2-0220		Pump Test Points - Hale Pumps	1	FE
22-R2-1820		Certification - Pump, 1500 GPM Pump	1	FE
22-R4-0420		Plate - Pump Test Certification	1	FE
24-A2-1620		Steamer Inlets - 6" w/Long Handle Cap, Left & Right Side	1	FE
24-J8-0420		Valve - Intake Relief	1	FE
24-R2-0420		Tank-To-Pump - 3" Valve w/Push-Pull Control	1	FE

PART NO	S	DESCRIPTION	QTY	ID
24-S6-0820	>	Tank Fill - 2" Valve w/Push-Pull Control	1	FE
24-T2-0420		Cooler - Engine, 1/2" Line w/ 1/4 Turn Valve	1	FE
24-T2-0620		Cooler - Pump, 3/8" Line w/ 1/4 Turn Valve (1/2")	1	FE
24-W2-0220		Plumbing - Stainless Steel	1	FE
24-W4-0220		Plumbing Finish - Natural	1	FE
26-A2-0220		Apparatus Valves - Akron Brass 8800 Series	1	FE
26-D2-0420		Suction - Left Side, 2-1/2" Valve w/Swing Control at Valve	1	FE
26-G2-0220		Suction - Right Side, 2-1/2" Valve w/Swing Control at Valve	1	FE
28-00-0100		DISCHARGE OUTLETS - SIDE MOUNT	1	FE
28-00-0220		All 2-1/2" Side Discharge Outlets Terminate 30-Degree Elbows	1	FE
28-D4-0420		Crosslays (2) - Double Lay, 2" Valve w/Push Pull Control	1	FE
28-D6-2020		Crosslay - Double Lay, 2-1/2" Valve w/Push Pull Control	1	FE
28-D8-0820		Cover - Hypalon w/End Flaps, Crosslays	1	FE
28-D8-2820		End Flaps - Hypalon w/Seat Belt Buckles, Crosslays	1	FE
28-D8-6220		Cover/End Flaps Color: Black	1	FE
28-H8-0420		Discharges (2) - Left Side, 2-1/2" Valve w/Push-Pull Control	1	FE
28-K4-0220		Discharge - Right Side, 2-1/2" Valve w/Push-Pull Control	1	FE
28-K4-4620	< >	Discharge - Right Side, 3" Valve w/Handwheel Control The handwheel control will be a Trident brand with center position indicator.	1	FE
28-Q2-0220		Discharge - Deck Gun, 3" Valve w/Push Pull Control	1	FE
28-R2-0220	<	Telescoping Waterway - 3" Manual, TFT XG**VL-PL Extend-A-Gun The specified Extend-A-Gun will extend 18".	1	FE
28-V2-1020		Discharge - Left Rear, 2-1/2" Valve w/Push-Pull Control	1	FE
28-V8-8020		Elbow - 2-1/2 FNST x 2-1/2" MNST Chrome 30 Degree, Trident 01.010.0	1	FE
28-W2-1020		Discharge - Right Rear, 2-1/2" Valve w/Push-Pull Control	1	FE
28-W8-8020		Elbow - 2-1/2 FNST x 2-1/2" MNST Chrome 30 Degree, Trident 01.010.0 == Body - Extruded Pumper (500-1250 Gallons) - 622.001 06/06/22 ==	1	FE
		WATER TANKS / COMPONENTS / ACCESSORIES		FE
32-A2-4220		Water Tank - Polypropylene, 1000 Gallons	1	FE
32-D8-0420		Certification - NFPA Water Tank Size	1	FE
34-A2-1220		Gauge - Water Level, Tank Vision Pro WLA300-A00	1	FE
52-A2-0220		Body - 96" Wide, Extruded Aluminum	1	FE
52-A6-4020		Body Sub Frame - Extruded Aluminum	1	FE
52-A6-6020		Body/Compartment Construction - 96" Wide Body	1	FE
52-A6-8220		Upper Body Side - Flush/Smooth	1	FE
52-A8-0220		Wheel Well Panels & Fenders - Body, Aluminum Tread plate	1	FE
52-A8-0820		Fenderettes - Black Rubber	1	FE
52-A8-1020		Hose Bed - 67-1/2" Wide	1	FE
52-D6-4220	S <	Compartments- Left Side, Rescue Style (36/58/44 w/64" Interior Height) L1 There shall be one-(1) left front compartment installed ahead of the rear axle. The interior dimensions will be approximately 36" wide x 64" high x 25" deep. L2 There shall be one-(1) compartment installed above the wheel well. The interior dimensions will be approximately 58" wide x 32" high x 25" deep. L3 There shall be one-(1) left rear compartment installed behind the rear axle. The interior dimensions will be approximately 44" wide x 64" high x transverse.	1	FE
		<u>COMPARTMENTS, LEFT SIDE</u>		
52-H4-6220	<	Compartments - Right Side, Rescue Style (36/58/44 w/64" Interior Height) R1 There will be one-(1) right front compartment installed ahead of the rear axle. The interior dimensions will be approximately 36" wide x 64" high x 25" deep in the lower section and 12" deep in the upper section. R2 There will be one-(1) compartment installed above the wheel well. The interior dimensions will be approximately 58" wide x 32" high x 12" deep.	1	FE

PART NO	S	DESCRIPTION	QTY	ID
		R3 There will be one-(1) right rear compartment installed behind the rear axle. The interior dimensions will be approximately 44" wide x 64" high x transverse in the lower section and 12" deep in the upper section.		
52-J8-0420	<	Compartment - Center Rear, Standard Height B1 There shall be one-(1) compartment installed at the center rear of the apparatus. The compartment shall have an interior dimension of approximately 46" wide x 28" high.	1	FE
56-D8-0220	< >	Compartment Doors - Hinged, Flush Look The double hinged door will be located on compartment B1.	1	FE
56-D8-0620	< >	Compartment Door - Roll Up, Satin Finish There will be a satin finish ROM roll up door installed on compartment L1, compartment L2, compartment L3, compartment R1, compartment R2 and compartment R3.	6	FE
58-A0-0420		Rear Body Construction - Flat Back Design	1	FE
58-A0-1820		Step - Intermediate Rear, Aluminum Tread Plate	1	FE
60-A2-4820		Vertical Load Test - Body	1	FE
60-A2-8020	<	Compartment - Full Depth, Per Compartment The left side compartments will be full depth.	3	FE
62-A2-4820		Compartment - Pike Pole/Ladder Storage, Right Side Beside Tank	1	FE
62-B2-1220	<	Tubes (2) - Pike Pole Storage The tubes will be located in the ladder compartment.	1	FE
62-D2-1820		Compartment - Suction Hose Storage, Top of Side Compartments	1	FE
64-B2-0420	>	Compartment - Wheel Well Double Air Bottle, Left Front (SIG4)	1	FE
64-B4-0220		Compartment - Wheel Well Single Air Bottle, Left Rear (SIG4)	1	FE
64-B4-6230	>	Compartment - Wheel Well Double Air Bottle, Right Front (FFA)	1	FE
64-B6-6220	>	Compartment - Wheel Well Double Air Bottle, Right Rear (SIG4)	1	FE
64-B8-0620		Doors - Wheel Well Compartments, Painted Aluminum	1	FE
66-A2-0220		Body Trim Package	1	FE
66-A2-0620		Body Trim - Vertical Handrails (2), Knurled Aluminum	1	FE
66-A2-1420		Body Trim - NO Rear Stanchions	1	FE
66-A2-2420		Fuel Fill - Recessed w/Door, Left Side	1	FE
66-A2-4420		Mud Flaps - Rear	1	FE
66-A2-4620		Rub Rail - Extruded Aluminum	1	FE
66-A4-1020		Step - 12" Rear, Aluminum Tread Plate	1	FE
66-A4-4420	<	Step - Chrome Folding, Front of Body There will be three-(3) steps located on each side of the apparatus on the front compartment faces.	6	FE
66-A4-6220		Step - Chrome Folding, Rear of Body	6	FE
66-A4-8820		Tow Eyes (2) - Rear, Below Body	1	FE
66-A6-2220		Handrail - Below Hose Bed, Knurled Aluminum	1	FE
66-A6-6420		Handrail - Front of Body, 12" Knurled Aluminum	2	FE
66-A8-1620		Divider - Hose Bed, Pumper	1	FE
66-A8-2420		Hand Hole in Hose Bed Divider	1	FE
66-A8-4220		Cover - Hose Bed, Hypalon	1	FE
66-A8-6920		End Flap - Hypalon w/Seat Belt Buckles, Hose Bed	1	FE
66-A8-8220		Cover/End Flap Color: Black	1	FE
66-A8-8820	<	Hose Bed Capacity The hose bed shall have the capacity to hold the following: No hose bed capacity was specified at the time of proposal completion. The overall height may increase due to the required hose load specified by the Fire Department. A safety sign FAMA22, which warns of the need to secure hose, shall be visible to personnel at the hose storage area.	1	FE

PART NO	S	DESCRIPTION	QTY	ID
66-B2-0620	< >	== Body Components - Pumpers - 622.001 06/06/22 == Unistruts - Aluminum, Per Compartment Adjustable tracking will be installed in each body compartment.	7	FE FE
66-F4-0420	<	Divider - Compartment There will be a bolt-in divider located in the lower section of compartment L3 and compartment R3 to isolate compartment B1.	2	FE
70-A2-2020		== Elec. Components - Pumper Commercial - 622.001 06/06/22 == ***** ELECTRICAL / COMPONENTS / ACCESSORIES ***** Electrical System - Apparatus Body, E2020	1	FE FE
70-A2-4020		Electrical System - 12 Volt Testing	1	FE
70-A2-6020		12-Volt Wiring Protection - Split Loom	1	FE
70-A2-8020		EMI/RFI Protection	1	FE
		AUDIBLE WARNING DEVICES		FE
		INTERIOR COMPARTMENT LIGHTING		FE
70-D4-0220	< >	Light - LED Compartment, Amdor Luma Bar There will be two-(2) lights installed in each body compartment.	14	FE
70-H2-0220		Switch - Compartment Door Ajar Indicator	1	FE
72-M4-6020	<	Zone B/D Upper Body Side Front (2) - Red w/Clear, Federal QuadraFlare QL97XFC-R There will be one-(1) light installed on each side of the apparatus on the upper front corners of the body.	1	FE
72-P4-6020	<	Zone B/D Upper Body Side Rear (2) - Red w/Clear, Federal QuadraFlare QL97XFC-R There will be one-(1) light installed on each side of the apparatus on the upper rear corners of the body.	1	FE
72-S4-4620	<	Zone C Upper Outboard Lights (2) - Red w/Clear, Federal QuadraFlare QL97XFC-R There will be one-(1) light installed on each side of the apparatus on the upper rear of the unit above the scene lights.	1	FE
74-E4-6020	<	Zone B & D Lower Midship (2) - Red w/Clear Lens, Federal QuadraFlare QL64XFC-R There will be one-(1) light located on each side of the apparatus in the body wheel well area.	1	FE
74-G4-6020	<	Zone B & D Lower Rear (2) - Red w/Clear Lens, Federal QuadraFlare QL64XFC-R There will be one-(1) light located on each side of the apparatus on the rear tailboard ends.	1	FE
74-H4-6020	<	Zone C Lower Lights (2) - Red w/Clear Lens, Federal QuadraFlare QL64XFC-R There will be one-(1) light located on each side of the apparatus in the rear tail light housings.	1	FE
74-J2-4020		Stop/Turn/Reverse Lights - LED, Federal QL64 Series	1	FE
74-J2-6220		Housing - Rear Tail Light Assembly, Federal QL64Z4H	1	FE
		12-VOLT APPARATUS LIGHTING / ACCESSORIES		FE
74-L0-2220		Lights - LED Clearance and Maker	1	FE
74-L2-0820	S <	Light - 20" LED Luma Bar H20 AY-9500-020 One-(1) Luma Bar H20 20" LED light will be installed at the front bulkhead of the hose bed. The light will be controlled by a rocker switch located on the driver side rear body panel. <u>HOSE BED WORK LIGHT</u>	1	FE

PART NO	S	DESCRIPTION	QTY	ID
74-L2-1220	<	Light - LED Underbody, FireTech FT-CU-AQX The will be a ground light installed below compartment L1, compartment L3, compartment R1 and compartment R3.	4	FE
74-L2-4020		Light - LED License, Whelen OAOCEDCR	1	FE
74-L4-8020	<	Switch - Additional Rocker The switch will be located on the driver's side rear of the apparatus to control the hose bed light.	1	FE
74-P2-9220	< >	Lights (2) - 12 Volt LED Scene, FireTech Guardian FT-GSM There will be two-(2) lights installed on each side of the apparatus on the upper front and rear corners of the body. There will be one-(1) light installed on each side of the apparatus on the upper rear of the unit below the warning lights.	3	FE
		== Paint - SM Extruded - 622.001 06/06/22 ==		FE
80-C2-0230		Paint - Body	1	FE
80-C2-0420	>	Paint Color/Code: Red FLNA 31979 (FFA Red 1)	1	FE
80-D2-1220		Interior Compartment Finish - Natural	1	FE
80-E8-0220		Striping - Rear Body, Reflective Chevron	1	FE
80-E8-1020		Chevron Striping Colors: Reflexite Red & Yellow	1	FE
80-E8-4020		Reflective Material - Designated Walking Surfaces	1	FE
		== Warranty / Manuals - Pumpers Commercial - 622.001 06/06/22 ==		FE
98-A2-0420		Warranty - Body Material & Workmanship, 2-Year / 36,000 Miles	1	FE
98-A4-0420		Warranty - Body Structure, 10-Year / 100,000 Miles (Aluminum)	1	FE
98-A6-0220		Warranty - Body Paint / Perforation, 10 Year	1	FE
98-A8-6020		Warranty - Hale Pumps	1	FE
98-A8-8020		Warranty - Plumbing System, 10-Year / 100,000 Miles	1	FE
98-A8-8420		Warranty - Poly Water Tank, Lifetime	1	FE
98-B2-1820		Manuals - Apparatus Body & Components	1	FE
98-B2-2020		Manuals - Pump	1	FE
98-B2-2220		Safety Guide - FAMA	1	FE
98-B2-6620		Wiring Diagrams - Apparatus Body, Standard	1	FE
		== Loose Equipment Pkg. - Pumper - 622.001 06/06/22 ==		FE
90-A2-0220	<	Equipment Package - NFPA 1901 2016, Fire Department Supplied The loose equipment as outlined in NFPA 1901, 2016 edition, section 5.9 thru 5.9.4 shall be provided by the fire department unless it is listed in this proposal. All loose equipment shall be installed on the apparatus before placed in emergency service, unless the Fire Department authorized agent signs the State of Exception as listed in the NFPA 1901 Standard for Automotive Fire Apparatus sections 4.21 thru 4.21.2.	1	FE
90-C2-0420		Ladder - 10' Folding Attic, Alco-Lite FL-10	1	FE
90-C6-0420		Ladder - 14' Roof, Alco-Lite PRL-14	1	FE
90-D6-1020		Ladder - 24' 2-Section Extension, Alco-Lite PEL-24	1	FE
90-H8-0420		Hose (2) - PVC Flexible Suction, Kochek 10' x 6"	1	FE
96-C2-0220	<	Wheel Chocs (2) - Folding, Ziamatic SAC-44-E The wheel chocks will be shipped loose with the apparatus.	1	FE
96-C2-0420	<	Holders (2) - Wheel Chocs, Ziamatic SQCH-44-H The holders will be shipped loose with the apparatus.	1	FE
		== Administration - 622.001 06/06/22 ==		FE