	Bidder Complies	
	Yes	No

CITY OF WARWICK FIRE DEPARTMENT, WARWICK RHODE ISLAND. SPECIFICATION FOR TWO (2) 1,500 GALLON PER MINUTE FIRE DEPARTMENT PUMPER APPARATUS

Bids will only be accepted from a single source apparatus manufacturer. The definition of single source is a manufacturer that designs and manufactures their products using an integrated approach, including the chassis, cab weldment, cab, pumphouse (including the sheet metal enclosure, valve controls, piping and operators panel) and body being designed, fabricated and assembled on the bidder's premises. The electrical system (hardwire or multiplex) must be both designed and integrated by the same apparatus manufacturer. The warranties relative to these major components (excluding component warranties such as engine, transmission, axles, pump, etc.) must be from a single source manufacturer and not split between manufacturers (i.e. body, pumphouse, cab weldment and chassis). The bidder must provide evidence that they comply with this requirement.

The bidder must state the location of the factory where the apparatus is to be built.

DELIVERY DATE

Delivery date will be up to 120 calendar days of the time of the award.

SPECIAL INSTRUCTIONS

The apparatus being proposed must be designed and built to match the Similar to job 30424. However, some variation may be necessary due to changes in our manufacturing processes or our product offering. Revisions in NFPA guidelines and/or other regulations may also affect our ability to match the previous unit.

NFPA 2016 STANDARDS

This unit must comply with the NFPA standards effective January 1, 2016, except for fire department specifications that differ from NFPA specifications. These exceptions must be set forth in the Statement of Exceptions.

Certification of slip resistance of all stepping, standing and walking surfaces must be supplied with delivery of the apparatus.

All horizontal surfaces designated as a standing or walking surface that are greater than 48.00" above the ground must be defined by a 1.00" wide line along its outside perimeter. Perimeter markings and designated access paths to destination points must be identified on the customer approval print and are shown as approximate. Actual location(s) must be determined based on materials used and actual conditions at final build. Access paths may pass through hose storage

	Bidder Complies	
	Yes	No
areas and opening or removal of covers or restraints may be required. Access paths may require the operation of devices and equipment such as the aerial device or ladder rack. A plate that is highly visible to the driver while seated must be provided. This plate must show the overall height, length, and gross vehicle weight rating. The manufacturer must have programs in place for training, proficiency testing and performance for any staff involved with certifications. An official of the company must designate, in writing, who is qualified to witness and certify test results. **NFPA COMPLIANCY** Apparatus proposed by the bidder must meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Fire department's specifications that differ from NFPA specifications must be indicated in the proposal as "non-NFPA". **VEHICLE INSPECTION PROGRAM CERTIFICATION** To assure the vehicle is built to current NFPA standards, the apparatus, in its entirety, must be third-party, independent, audit-certified through Underwriters Laboratory (UL) that it is built and complies to all applicable standards in the current edition of NFPA 1901. The certification includes: all design, production, operational, and performance testing of not only the apparatus, but those components that are installed on the apparatus (no exception). A placard must be affixed in the driver's side area stating the third party agency, the date, the standard and the certificate number of the whole vehicle audit. **PUMP TEST** The pump must be tested, approved, and certified by Underwriter's Laboratory at the manufacturer's expense. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horsepower curve; and the manufacturer's record of pump construction details must be forwarded to the Fire Department. **GENERATOR TEST** If the unit has a generator, the generator must be tested, approved, and certified by Underwriters Laboratories at the manufacturer's expense. The test results must be provided to the Fire Department at the time of delivery. **BREATHING AIR TEST** If the unit has breathing air, the apparatus manufacturer must draw an air sample from the air system and certify that the air quality meets the requirements of NFPA 1989, *Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection.*		

	Bidder Complies	
	Yes	No

BID BOND

All bidders must provide a bid bond as security for the bid in the form of a 10% bid bond to accompany their bid. This bid bond must be issued by a Surety Company who is listed on the U.S. Treasury Departments list of acceptable sureties as published in Department Circular 570. The bid bond must be issued by an authorized representative of the Surety Company and must be accompanied by a certified power of attorney dated on or before the date of bid. The bid bond must include language, which assures that the bidder/principal must give a bond or bonds as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract, including the Basic One (1) Year Limited Warranty, and for the prompt payment of labor and material furnished in the prosecution of the contract.

Proposals received from bidders who do not manufacture the chassis must provide a warranty that must be issued jointly and severally by, and signed by, both the bidder and the chassis manufacturer.

If the successful bidder does not manufacture the chassis, the bidder must supply a warranty bond, in addition to their performance bond, along with their signed contract. This warranty bond must guarantee all terms and conditions of the Basic One (1) Year Limited Warranty and names both the bidder and chassis manufacturer as co-principals. This warranty bond must be issued for the contract amount and must remain in force for a term which is consistent with the term of the Basic One (1) Year Limited Warranty.

Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle must apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle must not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision must prevail.

PERFORMANCE BOND

Notwithstanding any document or assertion to the contrary, any surety bond related to the sale of a vehicle must apply only to the Basic One (1) Year Limited Warranty for such vehicle. Any surety bond related to the sale of a vehicle will not apply to any other warranties that are included within this bid (OEM or otherwise) or to the warranties (if any) of any third party of any part, component, attachment or accessory that is incorporated into or attached to the vehicle. In the event of any contradiction or inconsistency between this provision and any other document or assertion, this provision must prevail.

	Bidder Complies	
	Yes	No

APPROVAL DRAWING

A drawing of the proposed apparatus must be provided for approval before construction begins. The sales representative must also have a copy of the same drawing. The finalized and approved drawing must become part of the contract documents. This drawing must indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus must be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing.

ELECTRICAL WIRING DIAGRAMS

Two (2) electrical wiring diagrams, prepared for the model of chassis and body, must be provided.

CHASSIS

Chassis provided must be a new, tilt-type custom fire apparatus. The chassis must be manufactured in the apparatus body builder's facility eliminating any split responsibility. The chassis must be designed and manufactured for heavy-duty service, with adequate strength and capacity for the intended load to be sustained and the type of service required.

WHEELBASE

The wheelbase of the vehicle must be no greater than 191.50".

GVW RATING

The gross vehicle weight rating must be a minimum of 43,500#.

FRAME

The chassis frame must be built with two (2) steel channels bolted to five (5) cross members or more, depending on other options of the apparatus. The side rails must be heat-treated steel measuring 10.25" x 3.50" x .375".

Each rail must have a section modulus of 16.00 cubic inches, yield strength of 120,000 psi, and a resisting bending moment (rbm) of 1,921,069 inch-pounds.

FRONT NON DRIVE AXLE

The front axle must be of the independent suspension design with a ground rating of 19,500 lb.

Upper and lower control arms must be used on each side of the axle. Upper control arm castings must be made of 100,000-psi yield strength 8630 steel and the lower control arm casting must be made of 55,000-psi yield ductile iron.

The center cross members and side plates must be constructed out of 80,000-psi yield strength steel.

	Bidder Complies	
	Yes	No
Each control arm must be mounted to the center section using elastomer bushings. These rubber bushings must rotate on low friction plain bearings and be lubricated for life. Each bushing must also have a flange end to absorb longitudinal impact loads, reducing noise and vibrations. There must be nine (9) grease fittings supplied, one (1) on each control arm pivot and one (1) on the steering gear extension. The upper control arm must be shorter than the lower arm so that wheel end geometry provides positive camber when deflected below rated load and negative camber above rated load. Camber at load must be zero degrees for optimum tire life. The ball joint bearing must be of low friction design and be maintenance free. Toe links that are adjustable for alignment of the wheel to the center of the chassis must be provided. The wheel ends must have little to no bump steer when the chassis encounters a hole or obstacle. The steering linkage must provide proper steering angles for the inside and outside wheel, based on the vehicle wheelbase. The axle must have a third party certified turning angle of 45 degrees. Front discharge, front suction, or aluminum wheels must not infringe on this cramp angle. **FRONT SUSPENSION** An independent front suspension must be provided with a minimum ground rating of 19,500 lb. The independent suspension system must be designed to provide maximum ride comfort. The design must allow the vehicle to travel at highway speeds over improved road surfaces and at moderate speeds over rough terrain with minimal transfer of road shock and vibration to the vehicle's crew compartment. Each wheel must have a torsion bar type spring. In addition, each front wheel end must also have energy absorbing jounce bumpers to prevent bottoming of the suspension. The suspension design must be such that there is at least 10.00" of total wheel travel and a minimum of 3.75" before suspension bottoms. The torsion bar anchor lock system allows for simple lean adjustments, without the use of shims. One can adjust for a lean within 15 minutes per side. Anchor adjustment design is such that it allows for ride height adjustment on each side.		

	Bidder Complies	
	Yes	No
The independent suspension must have been put through a durability test that simulated a minimum of 140,000 miles of inner city driving. **FRONT SHOCK ABSORBERS** KONI heavy-duty telescoping shock absorbers must be provided on the front suspension. **FRONT OIL SEALS** Oil seals with viewing window must be provided on the front axle. **FRONT TIRES** Front tires must be Goodyear® 315/80R22.50 radials, 20 ply G289 WHA tread, rated for 20,400 lb maximum axle load and 68 mph maximum speed. The tires must be mounted on Alcoa 22.50" x 9.00" polished aluminum disc wheels with a ten (10) stud, 11.25" bolt circle. **REAR AXLE** The rear axle must be a Dana, Model S23-170, with a capacity of 24,000 lb. **TOP SPEED OF VEHICLE** A rear axle ratio must be furnished to allow the vehicle to reach a top speed of 68 mph. **REAR SUSPENSION** The rear suspension must be Standens, semi-elliptical, 3.00" wide x 53.00" long, 12-leaf pack with a ground rating of 24,000 lb. The spring hangers must be castings. The two (2) top leaves must wrap the forward spring hanger pin, and the rear of the spring must be a slipper style end that must ride in a rear slipper hanger. To reduce bending stress due to acceleration and braking, the front eye must be a berlin eye that must place the front spring pin in the horizontal plane within the main leaf. A steel encased rubber bushing must be used in the spring eye. The steel encased rubber bushing must be maintenance free and require no lubrication. **REAR OIL SEALS** Oil seals must be provided on the rear axle(s). **REAR TIRES** Rear tires must be four (4) Goodyear® 12R22.50 radials, 16 ply all season G622 RSD tread, rated for 27,120 lb maximum axle load and 75 mph maximum speed. The outside tires must be mounted on Alcoa© 22.50" x 8.25" polished aluminum disc wheels with a ten (10) stud 11.25" bolt circle.		

	Bidder Complies	
	Yes	No
The inside tires must be mounted on 22.50" x 8.25" steel disc wheels with a ten (10) stud 11.25" bolt circle. An isolator must be provided between the steel and aluminum rims. **TIRE BALANCE** All tires must be balanced with Counteract balancing beads. The beads must be inserted into the tire and eliminate the need for wheel weights. **TIRE PRESSURE MANAGEMENT** There must be a RealWheels LED AirSecure™ tire alert pressure management system provided, that must monitor each tire's pressure. A sensor must be provided on the valve stem of each tire for a total of six (6) tires. The sensor must calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi. The sensor must activate an integral battery operated LED when the pressure of that tire drops 5 to 8 psi. Removing the cap from the sensor must indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED must immediately start to flash. **FRONT HUB COVERS** Stainless steel hub covers must be provided on the front axle. An oil level viewing window must be provided. **REAR HUB COVERS** A pair of stainless steel high hat hub covers must be provided on rear axle hubs. **MUD FLAPS** Mud flaps must be installed behind the front and rear wheels of the apparatus. **WHEEL CHOCKS** There must be one (1) pair of folding Ziamatic, Model SAC-44-E, aluminum alloy, Quick-Choc wheel blocks with easy-grip handle provided. **WHEEL CHOCK BRACKETS** There must be one (1) pair of Zico, Model SQCH-44-H, horizontal mounting wheel chock brackets provided for the Ziamatic, Model SAC-44-E, folding wheel chocks. The brackets must be made of aluminum and consist of a quick release spring loaded rod to hold the wheel chocks in place. The brackets must be mounted below the left side rear compartment.		

	Bidder Complies	
	Yes	No

ANTI-LOCK BRAKE SYSTEM

The vehicle must be equipped with a Meritor WABCO 4S4M, anti-lock braking system. The ABS must provide a 4-channel anti-lock braking control on both the front and rear wheels. A digitally controlled system that utilizes microprocessor technology must control the anti-lock braking system. Each wheel must be monitored by the system. When any particular wheel begins to lockup, a signal must be sent to the control unit. This control unit must then reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system must eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

BRAKES

The service brake system must be full air type.

The front brakes must be Knorr/Bendix disc type with a 17.00" ventilated rotor for improved stopping distance.

The brake system must be certified, third party inspected, for improved stopping distance.

The rear brakes must be Bendix®, Model ES1657D, 16.50" x 7.00" cam operated with automatic slack adjusters.

BRAKE SYSTEM AIR COMPRESSOR

The air compressor must be a Cummins/WABCO with 18.7 cubic feet per minute output.

BRAKE SYSTEM

The brake system must include:

- Brake treadle valve
- Heated automatic moisture ejector on air dryer
- Total air system minimum capacity of 4,272 cubic inches
- Two (2) air pressure gauges with a red warning light and an audible alarm, that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a push-pull style control valve
- A parking "brake on" indicator light on instrument panel
- Park brake relay/inversion and anti-compounding valve, in conjunction with a double check valve system, with an automatic spring brake application at 40 psi
- A pressure protection valve to prevent all air operated accessories from drawing air from the air system when the system pressure drops below 80 psi (550 kPa)
- 1/4 turn drain valves on each air tank

The air tank must be primed and painted to meet a minimum 750 hour salt spray test.

	Bidder Complies	
	Yes	No

To reduce the effects of corrosion, the air tank must be mounted with stainless steel brackets (no exception).

BRAKE SYSTEM AIR DRYER

The air dryer must be a WABCO System Saver 1200 IWT, with internal wet tank, spin-on coalescing filter cartridge and 100 watt heater.

BRAKE LINES

Color-coded nylon brake lines must be provided. The lines must be wrapped in a heat protective loom where necessary in the chassis.

AIR INLET

One (1) air inlet with 3D series male coupling must be provided. It must allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet must be located forward in the driver side lower step well of cab. A check valve must be provided to prevent reverse flow of air. The inlet must discharge into the "wet" tank of the brake system. A mating female fitting must also be provided with the loose equipment.

ENGINE

The chassis must be powered by an electronically controlled engine as described below:

Make:	Cummins
Model:	L9
Power:	450 hp at 2100 rpm
Torque:	1250 lb-ft at 1400 rpm
Governed Speed:	2200 rpm
Emissions Level:	EPA 2017
Fuel:	Diesel
Cylinders:	Six (6)
Displacement:	543 cubic inches (8.9L)
Starter:	Delco 39MT™
Fuel Filters:	Spin-on style primary filter with water separator and water-in-fuel sensor. Secondary spin-on style filter.

The engine must include On-board diagnostics (OBD), which provides self diagnostic and reporting. The system must give the owner or repair technician access to state of health information for various vehicle sub systems. The system must monitor vehicle systems, engine

	Bidder Complies	
	Yes	No
and after treatment. The system must illuminate a malfunction indicator light on the dash console if a problem is detected. **HIGH IDLE** A high idle switch must be provided, inside the cab, on the instrument panel, that must automatically maintain a preset engine rpm. A switch must be installed, at the cab instrument panel, for activation/deactivation. The high idle must be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light must be provided, adjacent to the switch. The light must illuminate when the above conditions are met. The light must be labeled "OK to Engage High Idle." **ENGINE BRAKE** A Jacobs® engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver. The driver must be able to turn the engine brake system on/off and have a high, medium and low setting. The engine brake must activate when the system is on and the throttle is released. The high setting of the brake application must activate and work simultaneously with the variable geometry turbo (VGT) provided on the engine. The engine brake must be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated. The ABS system must automatically disengage the auxiliary braking device, when required. **CLUTCH FAN** A fan clutch must be provided. The fan clutch must be automatic when the pump transmission is in "Road" position, and constantly engaged when in "Pump" position. **ENGINE AIR INTAKE** The engine air intake must be located above the engine cooling package. It must draw fresh air from the front of the apparatus through the radiator grille. A stainless steel metal screen must be installed at the inlet of the air intake system that must meet NFPA 1901 requirements. The air cleaner and stainless steel screen must be easily accessible by tilting the cab.		

	Bidder Complies	
	Yes	No

EXHAUST SYSTEM

The exhaust system must be stainless steel from the turbo to the engine's aftertreatment device, and must be 4.00" in diameter. The exhaust system must include a single module aftertreatment device to meet current EPA standards. An insulation wrap must be provided on all exhaust pipes between the turbo and aftertreatment device to minimize the heat loss to the aftertreatment device . The exhaust must terminate horizontally ahead of the right side rear wheels. A tailpipe diffuser must be provided to reduce the temperature of the exhaust as it exits. Heat deflector shields must be provided to isolate chassis and body components from the heat of the tailpipe diffuser.

EXHAUST MODIFICATION

The exhaust diffuser must be reduced to 4.00" in the center to accommodate the fire department's air recovery system. There must be a minimum of 4.00" clearance around the diffuser for proper cooling.

RADIATOR

The radiator and the complete cooling system must meet or exceed NFPA and engine manufacturer cooling system standards.

For maximum corrosion resistance and cooling performance, the entire radiator core must be constructed using long life aluminum alloy. The radiator core must consist of aluminum fins, having a serpentine design, brazed to aluminum tubes. No solder joints or leaded material of any kind must be acceptable in the core assembly.

The radiator core must have a minimum front area of 1060 square inches.

Supply tank must be made of heavy duty glass-reinforced nylon and the return tank must be mode of aluminum. Both tanks must be crimped onto the core assembly using header tabs and a compression gasket to complete the radiator core assembly. There must be a full steel frame around the inserts to enhance cooling system durability and reliability.

The radiator must be compatible with commercial antifreeze solutions.

The radiator assembly must be isolated from the chassis frame rails with rubber isolators to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven terrain.

The radiator must include a de-aeration/expansion tank. For visual coolant level inspection, the radiator must have a built-in sight glass. The radiator must be equipped with a 15 psi pressure relief cap.

A drain port must be located at the lowest point of the cooling system and/or the bottom of the radiator to permit complete flushing of the coolant from the system.

	Bidder Complies	
	Yes	No
Shields or baffles must be provided to prevent recirculation of hot air to the inlet side of the radiator. **COOLANT LINES** Gates® silicone hoses must be used for all engine/heater coolant lines installed by the chassis manufacturer. The chassis manufacturer must also use Gates brand hose on other heater, defroster and auxiliary coolant circuits. There must be some areas in which an appropriate Gates product is not available. In those instances a comparable silicone hose from another manufacturer must be used. Hose clamps must be stainless steel constant torque type to prevent coolant leakage. They must react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose. **FUEL TANK** A 65 gallon fuel tank must be provided and mounted at the rear of the chassis. The tank must be constructed of 12-gauge, hot rolled steel. It must be equipped with swash partitions and a vent. To eliminate the effects of corrosion, the fuel tank must be mounted with stainless steel straps (no exception). A 0.75" drain plug must be provided in a low point of the tank for drainage. A fill inlet must be located on the left hand side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Ultra Low Sulfur - Diesel Fuel Only." A 0.50" diameter vent must be provided running from top of tank to just below fuel fill inlet. The tank must meet all FHWA 393.67 requirements including a fill capacity of 95 percent of tank volume. All fuel lines must be provided as recommended by the engine manufacturer. **DIESEL EXHAUST FLUID TANK** A 4.5 gallon diesel exhaust fluid (DEF) tank must be provided and mounted in the driver's side body forward of the rear axle. A 0.50" drain plug must be provided in a low point of the tank for drainage. A fill inlet must be located on the driver's side of the body and be covered with a hinged, spring loaded, polished stainless steel door that is marked "Diesel Exhaust Fluid Only".		

	Bidder Complies	
	Yes	No

The tank must meet the engine manufacturers requirement for 10 percent expansion space in the event of tank freezing.

The tank must include an integrated heater unit that utilizes engine coolant to thaw the DEF in the event of freezing.

FUEL SHUTOFF

A shutoff valve must be installed in the fuel line, near the filter.

LABEL, DEF DOOR

A label, reading "DEF Fluid Only" must be provided on the inside of the fill door.

FUEL FILL LOWERED

The fuel fill must be lowered.

TRANSMISSION

An Allison 5th generation, Model EVS 3000P, electronic torque converting automatic transmission must be provided.

The transmission must be equipped with prognostics to monitor oil life, filter life, and transmission health. A wrench icon on the shift selector's digital display must indicate when service is due.

Two (2) PTO openings must be located on both sides of converter housing (positions 4 o'clock and 8 o'clock) as viewed from the rear.

A transmission temperature gauge with red light and audible alarm must be installed on the cab dash.

TRANSMISSION SHIFTER

A five (5)-speed push button shift module must be mounted to right of driver on console. Shift position indicator must be indirectly lit for after dark operation.

The transmission ratio must be:

1st	3.49 to 1.00
2nd	1.86 to 1.00
3rd	1.41 to 1.00
4th	1.00 to 1.00
5th	0.75 to 1.00
R	5.03 to 1.00

	Bidder Complies	
	Yes	No

TRANSMISSION COOLER

A Modine plate and fin transmission oil cooler must be provided using engine coolant to control the transmission oil temperature.

DRIVELINE

Drivelines must be a heavy-duty metal tube and be equipped with Spicer® 1710 universal joints.

The shafts must be dynamically balanced before installation.

A splined slip joint must be provided in each driveshaft where the driveline design requires it. The slip joint must be coated with Glidecoat® or equivalent.

STEERING

Dual Sheppard, Model M110, steering gears, with integral heavy-duty power steering, must be provided. For reduced system temperatures, the power steering must incorporate an air to oil cooler and an Eaton, Model VN20, hydraulic pump with integral pressure and flow control. All power steering lines must have wire braded lines with crimped fittings.

A tilt and telescopic steering column must be provided to improve fit for a broader range of driver configurations.

STEERING WHEEL

The steering wheel must be 18.00" in diameter, have tilting and telescoping capabilities, and a 2-spoke design.

BUMPER

A one (1) piece, ten (10) gauge, 304-2B type polished stainless steel bumper, a minimum of 10.00" high, must be attached to a bolted modular extension frame constructed of 50,000 psi tensile steel "C" channel mounted directly behind it to provide adequate support strength.

The bumper must be extended 22.00" from front face of cab.

Documentation must be provided, upon request to show that the options selected have been engineered for fit-up and approval for this modular bumper extension. A chart must be provided to indicate the option locations and must include, but not be limited to the following options: air horns, mechanical sirens, speakers, hose trays with hose capacities, winches, lights, discharge, and suction connections.

GRAVEL PAN

A gravel pan, constructed of bright aluminum treadplate, must be furnished between the bumper and cab face. The gravel pan must be properly supported from the underside to prevent flexing and vibration of the aluminum treadplate.

	Bidder Complies	
	Yes	No

HOSE TRAY

A hose tray, constructed of aluminum, must be placed in the center of the bumper extension.

The tray must have a capacity of 150' of 1.75" double jacket cotton-polyester hose.

Black rubber grating must be provided at the bottom of the tray. Drain holes are also provided.

CENTER HOSE TRAY COVER

A bright aluminum tread plate cover must be provided over the center hose tray.

The cover must be attached with a stainless steel hinge.

One (1) D-ring latch must secure the cover in the closed position and a pneumatic stay arm must hold the cover in the open position.

TOW HOOKS

Two (2) chromed steel tow hooks must be installed under the bumper and attached to the front frame members. The tow hooks must be designed and positioned to allow up to a 6,000 lb straight horizontal pull in line with the centerline of the vehicle. The tow hooks must not be used for lifting of the apparatus.

CAB

The cab must be designed specifically for the fire service and manufactured by the chassis builder.

The cab must be built by the apparatus manufacturer in a facility located on the manufacturer's premises (no exception).

For reasons of structural integrity and enhanced occupant protection, the cab must be a heavy duty design, constructed to the following minimal standards.

The cab must have 12 main vertical structural members located in the A-pillar (front cab corner posts), B-pillar (side center posts), C-pillar (rear corner posts), and rear wall areas. The A-pillar must be constructed of solid A356-T5 aluminum castings. The B-pillar and C-pillar must be constructed from 0.13" wall extrusions. The rear wall must be constructed of two (2) 2.00" x 2.00" outer aluminum extrusions and two (2) 2.00" x 1.00" inner aluminum extrusions. All main vertical structural members must run from the floor to 4.625" x 3.864" x 0.090" thick roof extrusions to provide a cage-like structure with the A-pillar and roof extrusions being welded into a 0.25" thick corner casting at each of the front corners of the roof assembly.

The front of the cab must be constructed of a 0.13" firewall plate, covered with a 0.090" front skin (for a total thickness of 0.22"), and reinforced with a full width x 0.50" thick cross-cab support located just below the windshield and fully welded to the engine tunnel. The cross-cab

	Bidder Complies	
	Yes	No
support must run the full width of the cab and weld to each A-pillar, the 0.13" firewall plate, and the front skin. The cab floors must be constructed of 0.125" thick aluminum plate and reinforced at the firewall with an additional 0.25" thick cross-floor support providing a total thickness of 0.375" of structural material at the front floor area. The front floor area must also be supported with two (2) triangular 0.30" wall extrusions that also provides the mounting point for the cab lift. This tubing must run from the floor wireway of the cab to the engine tunnel side plates, creating the structure to support the forces created when lifting the cab. The cab must be 96.00" wide (outside door skin to outside door skin) to maintain maximum maneuverability (no exception). The forward cab section must have an overall height (from the cab roof to the ground) of approximately 99.00". The crew cab section must have a 10.00" raised roof, with an overall cab height of approximately 109.00". The overall height listed must be calculated based on a truck configuration with the lowest suspension weight rating, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension must increase the overall height listed. The floor to ceiling height inside the crew cab must be 64.50" in the center and outboard positions. The crew cab floor must measure 46.00" from the rear wall to the back side of the rear facing seat risers. The medium block engine tunnel, at the rearward highest point (knee level), must measure 61.50" to the rear wall. The big block engine tunnel must measure 51.50" to the rear wall. The crew cab must be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants. The cab must be a full tilt cab style. A 3-point cab mount system with rubber isolators must improve ride quality by isolating chassis vibrations from the cab. **CAB ROOF DRIP RAIL** For enhanced protection from inclement weather, a drip rail must be furnished on the sides of the cab. The drip rail must be painted to match the cab roof, and bonded to the sides of the cab. The drip rail must extend the full length of the cab roof.		

	Bidder Complies	
	Yes	No

INTERIOR CAB INSULATION
The cab must include 1.00" insulation in the ceiling, 1.50" insulation in the side walls, and 2.00" insulation in the rear wall to maximize acoustic absorption and thermal insulation.

FENDER LINERS
Full circular inner fender liners in the wheel wells must be provided.

PANORAMIC WINDSHIELD
A one (1)-piece safety glass windshield must be provided with over 2,775 square inches of clear viewing area. The windshield must be full width and must provide the occupants with a panoramic view. The windshield must consist of three (3) layers: outer light, middle safety laminate, and inner light. The outer light layer must provide superior chip resistance. The middle safety laminate layer must prevent the windshield glass pieces from detaching in the event of breakage. The inner light must provide yet another chip resistant layer. The cab windshield must be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern must be applied on the outside perimeter of the windshield for a finished automotive appearance.

WINDSHIELD WIPERS
Three (3) electric windshield wipers with washer must be provided that meet FMVSS and SAE requirements.

The washer reservoir must be able to be filled without raising the cab.

ENGINE TUNNEL
Engine hood side walls must be constructed of 0.375" aluminum. The top must be constructed of 0.125" aluminum and must be tapered at the top to allow for more driver and passenger elbow room.

The engine hood must be insulated for protection from heat and sound. The noise insulation keeps the dBA level within the limits stated in the current NFPA 1901 standards.

The engine tunnel must be no higher than 17.00" off the crew cab floor (no exception).

INTERIOR CREW CAB REAR WALL ADJUSTABLE SEATING (PATENT PENDING)
The interior rear wall of the crew cab must have mounting holes every 2.75" to allow for adjustability of the forward facing crew cab seating along the rear wall. Seats must be adjustable with use of simple hand tools allowing departments flexibility of their seating arrangement should their department needs change.

CAB REAR WALL EXTERIOR COVERING
The exterior surface of the rear wall of the cab must be overlaid with bright aluminum treadplate except for areas that are not typically visible when the cab is lowered .

	Bidder Complies	
	Yes	No

CAB LIFT

A hydraulic cab lift system must be provided consisting of an electric powered hydraulic pump, dual lift cylinders, and necessary hoses and valves.

Lift controls must be located on the right side pump panel or front area of the body in a convenient location.

The cab must be capable of tilting 43 degrees to accommodate engine maintenance and removal.

The cab must be locked down by a 2-point normally closed spring loaded hook type latch that fully engages after the cab has been lowered. The system must be hydraulically actuated to release the normally closed locks when the cab lift control is in the raised position and cab lift system is under pressure. When the cab is completely lowered and system pressure has been relieved, the spring loaded latch mechanisms must return to the normally closed and locked position.

The hydraulic cylinders must be equipped with a velocity fuse that protects the cab from accidentally descending when the control is located in the tilt position.

For increased safety, a redundant mechanical stay arm must be provided that must be manually put in place on the left side between the chassis and cab frame when the cab is in the raised position. This device must be manually stowed to its original position before the cab can be lowered.

Cab Lift Interlock

The cab lift system must be interlocked to the parking brake. The cab tilt mechanism must be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism must be disabled.

GRILLE

A bright finished aluminum mesh grille screen, inserted behind a bright finished grille surround, must be provided on the front center of the cab.

TRIM BAND ON CAB FACE

A 10.00" band of 22 gauge patterned stainless steel trim must be installed across the front of the cab, from door hinge to door hinge. The trim band must be centered on the headlights and applied with two-sided tape. A 0.625" self-adhesive trim strip must be applied around the perimeter of the trim band.

SIDE OF CAB MOLDING

Chrome molding must be provided on both sides of cab.

	Bidder Complies	
	Yes	No

MIRRORS

A Retrac, Model 613423, dual vision, motorized, west coast style mirror, with chrome finish, must be mounted on each side of the front cab door with spring loaded retractable arms. The flat glass and convex glass must be heated and adjustable with remote control within reach of the driver.

DOORS

To enhance entry and egress to the cab, the forward cab door openings must be a minimum of 37.50" wide x 63.37" high. The crew cab doors must be located on the sides of the cab and must be constructed in the same manner as the forward cab doors. The crew cab door openings must be a minimum of 34.30" wide x 73.25" high.

The forward cab and crew cab doors must be constructed of extruded aluminum with a nominal material thickness of 0.093". The exterior door skins must be constructed from 0.090" aluminum.

A customized, vertical, pull-down type door handle must be provided on the exterior of each cab door. The exterior handle must be designed specifically for the fire service to prevent accidental activation, and must provide 4.00" wide x 2.00" deep hand clearance for ease of use with heavy gloved hands.

Each door must also be provided with an interior flush, open style paddle handle that must be readily operable from fore and aft positions, and be designed to prevent accidental activation. The interior handles must provide 4.00" wide x 1.25" deep hand clearance for ease of use with heavy gloved hands.

The cab doors must be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The keys must be Model 751. The locks must be capable of activating when the doors are open or closed. The doors must remain locked if locks are activated when the doors are opened, then closed.

A full length, heavy duty, stainless steel, piano-type hinge with a 0.38" pin and 11 gauge leaf must be provided on all cab doors. There must be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

A chrome grab handle must be provided on the inside of each cab door for ease of entry.

The bottom cab step at each cab door location must be located below the cab doors and must be exposed to the exterior of the cab.

DOOR PANELS

The inner cab door panels must be constructed out of brushed stainless steel.

	Bidder Complies	
	Yes	No

MANUAL CAB DOOR WINDOWS

All cab entry doors must contain a conventional roll down window.

CAB STEPS

The forward cab and crew cab access steps must be a full size two (2) step design to provide largest possible stepping surfaces for safe ingress and egress. The bottom steps must be designed with a grip pattern punched into bright aluminum treadplate material to provide support, slip resistance, and drainage. The bottom steps must be a bolt-in design to minimize repair costs should they need to be replaced. The forward cab steps must be a minimum 25.00" wide, and the crew cab steps must be 21.65" wide with a 10.00" minimum depth. The inside cab steps must not exceed 16.50" in height. A slip-resistant handrail must be provided adjacent to each cab door opening to assist during cab ingress and egress.

The vertical surfaces of the step well must be aluminum treadplate.

STEP LIGHTS

There must be six (6) white LED step lights installed for cab and crew cab access steps.

- One (1) light for the driver's access steps.
- Two (2) lights for the driver's side crew cab access steps.
- Two (2) lights for the passenger's side crew cab access steps.
- One (1) light for the passenger's side access step.

In order to ensure exceptional illumination, each light must provide a minimum of 25 foot-candles (fc) covering an entire 15" x 15" square placed ten (10) inches below the light and a minimum of 1.5 fc covering an entire 30" x 30" square at the same ten (10) inch distance below the light.

The lights must be activated when the battery switch is on and the adjacent door is opened.

FENDER CROWNS

Stainless steel fender crowns must be installed at the cab wheel openings.

CREW CAB WINDOWS

One (1) fixed window with tinted glass must be provided on each side of the cab, to the rear of the front cab door. The windows must be sized to enhance light penetration into the cab interior. The windows must measure 18.70" wide x 23.75" high.

MOUNTING PLATE ON ENGINE TUNNEL

Equipment installation provisions must be installed on the engine tunnel.

	Bidder Complies	
	Yes	No
A .25" smooth aluminum plate must be bolted to the top surface of the engine tunnel. The plate must follow the contour of the engine tunnel and must run the entire length of the engine tunnel. The plate must be spaced off the engine tunnel .50" to allow for wire routing below the plate. The mounting surface must be painted to match the cab interior. **CAB INTERIOR** The cab interior must be constructed of primarily metal (painted aluminum) to withstand the severe duty cycles of the fire service. The officer side dash must be a flat faced design to provide easy maintenance and must be constructed out of painted aluminum. The instrument cluster must be surrounded with a high impact ABS plastic contoured to the same shape of the instrument cluster. The engine tunnel must be padded and covered, on the top and sides, with gray woven with black Imperial 1200 vinyl coated polyester. Headliner must be installed in both forward and rear cab sections. Headliner material must be Imperial 1200 vinyl coated polyester. A sound barrier must be part of its composition. Material must be installed on aluminum sheet and securely fastened to interior cab ceiling. Forward portion of cab headliner must permit easy access for service of electrical wiring or other maintenance needs. All wiring must be placed in metal raceways. Routing through holes in tubing must not be accepted due to chaffing that installation must cause. **CAB INTERIOR UPHOLSTERY** The cab interior upholstery must be gray woven with black. **CAB INTERIOR PAINT** The cab interior metal surfaces must be painted fire smoke gray, vinyl texture paint. **CAB FLOOR** The cab and crew cab floor areas must be covered with Polydamp™ acoustical floor mat consisting of a black pyramid rubber facing and closed cell foam decoupler. The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a 0.25" thick closed cell foam (no water absorption) which offers a sound dampening material for reducing sound levels.		

	Bidder Complies	
	Yes	No

CAB DEFROSTER

To provide maximum defrost and heating performance, a 43,500 BTU heater-defroster unit with 350 CFM of air flow must be provided inside the cab. The defroster unit must be strategically located under the center forward portion of the vacuum formed instrument panel. For easy access, a removable vacuum formed cover must be installed over the defroster unit. The defroster must include an integral aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the 1-piece windshield. The defroster ventilation must be built into the design of the cab dash instrument panel and must be easily removable for maintenance. The defroster must be capable of clearing 98 percent of the windshield and side glass when tested under conditions where the cab has been cold soaked at 0 degrees Fahrenheit for 10 hours, and a 2 ounce per square inch layer of frost/ice has been able to build up on the exterior windshield. The defroster system must meet or exceed SAE J382 requirements.

CAB/CREW CAB HEATER

Two (2) 44,180 BTU auxiliary heaters with 276 CFM (each unit) of air flow must be provided inside the crew cab, one (1) in each outboard rear-facing seat riser. The heaters must include high performance dual scroll blowers, one (1) for each unit. Outlets for the heaters must be located below each rear facing seat riser and below the fronts of the driver and passenger seats, for efficient airflow. An extruded aluminum plenum must be incorporated in the cab structure that must transfer heat to the forward cab seating positions.

The heater/defroster and crew cab heaters must be controlled by a single integral electronic control panel. The heater control panel must allow the driver to control heat flow to the front and rear simultaneously. The control panel must include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of the driver. The control panel must include highly visible, progressive LED indicators for both fan speed and temperature.

AIR CONDITIONING

A high performance, customized air conditioning system must be furnished inside the cab and crew cab.

The air conditioning system must be capable of cooling the average cab temperature from 100 degrees Fahrenheit to 75 degrees Fahrenheit within 30 minutes at 50 percent relative humidity. The cooling performance test must be run only after the cab has been heat soaked at 100 degrees Fahrenheit for a minimum of 4 hours.

A radiator mounted condenser with a 59,644 BTU output that meets and exceed the performance specification must be installed. Mounting the condenser below the cab or body would reduce the performance of the system and must not be acceptable.

	Bidder Complies	
	Yes	No
One (1) evaporator unit must be installed in the center roof with two (2) cores, one (1) for the cab and one (1) for the crew cab. The evaporator unit must have an adequate BTU rating to meet the performance specifications. Adjustable air outlets must be strategically located on the evaporator cover per the following: • Four (4) must be directed towards the driver's location • Four (4) must be directed towards the officer's location • Seven (7) must be directed towards the crew cab area The air conditioner refrigerant must be R-134A and must be installed by a certified technician. The air conditioner must be controlled by a single electronic control panel. For ease of operation, the control panel must include variable adjustment for temperature and fan control and be conveniently located on the dash in clear view of the driver. **SUN VISORS** Two (2) smoked Lexan™ sun visors provided. The sun visors must be located above the windshield with one (1) mounted on each side of the cab. There must be a black plastic thumb latch provided to help secure each sun visor in the stowed position. **GRAB HANDLES** A black rubber covered grab handle must be mounted on the door post of the driver and officer's side cab door to assist in entering the cab. The grab handles must be securely mounted to the post area between the door and windshield. **ENGINE COMPARTMENT LIGHT** An engine compartment light must be installed under the engine hood, of which the switch is an integral part. Light must have a .125" diameter weep hole in its lens to prevent moisture retention. **ACCESS TO ENGINE DIPSTICKS** For access to the engine oil and transmission fluid dipsticks, there must be a door on the engine tunnel, inside the crew cab. The door must be on the rear wall of the engine tunnel, on the vertical surface. The engine oil dipstick must allow for checking only. The transmission dipstick must allow for both checking and filling. The door must have a rubber seal for thermal and acoustic insulation. One (1) flush latch must be provided on the access door.		

	Bidder Complies	
	Yes	No

MAP BOX

There must be one (1) map box with three (3) bins, open at top. The map box must be installed at final inspection. The map box must be divided into three (3) bins, each being 12.50" wide x 3.00" high x 12.00" deep. Each bin must slant 30 degrees from horizontal. The map box must be constructed of 0.125" aluminum and must be painted to match the cab interior.

SEATING CAPACITY

The seating capacity in the cab must be six (6).

DRIVER SEAT

A seat must be provided in the cab for the driver. The seat design must be a cam action type, with air suspension. For increased convenience, the seat must include a manual control to adjust the horizontal position (6.00" travel). The manual horizontal control must be a towel-bar style located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat must have an adjustable reclining back. The seat back must be a high back style with side bolster pads for maximum support. For optimal comfort, the seat must be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat must be furnished with a 3-point, shoulder type seat belt.

OFFICER SEAT

A seat must be provided in the cab for the passenger. The seat must be a fixed type with no suspension. For optimal comfort, the seat must be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control).

The seat back must be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity must be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity must be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat must be furnished with a 3-point, shoulder type seat belt.

COMMUNICATION RADIO EQUIPMENT WITH MOUNTING:

The bidder must include providing and installing two-way radio equipment in the vehicle. The price should include remote mount installation, programming, and any additional connectors and cables necessary to make the radio operational. The required radio is a Motorola APX 7500 Multi-Band Mid-Power Mobile Radio (M30TSS9PW1AN) to include the following items:

Palm Microphone, GCAI water resistant
Remote mount cable, 30ft
Astro digital CAI operation

	Bidder Complies	
	Yes	No
Remote mount mid-power 7/800 MHZ primary band VHF MP secondary band 3 yr SFS lite Enable dual band operation Smartzone operation APX Speaker, 15 watt, water resistant APX 05 Control head APX control head software 3db Gain Low-Profile antenna, 762-870 MHz 3bd Gain VHF Wideband antenna, 136-174 MHz P25 trunking software DVRS MSU activation SW key supplemental data		
REAR FACING DRIVER SIDE OUTBOARD SEAT There must be one (1) rear facing seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat must be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control). The seat back must be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity must be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity must be accomplished by unbolting, relocating, and re-bolting it in the desired location. The seat must be furnished with a 3-point, shoulder type seat belt.		
REAR FACING PASSENGER SIDE OUTBOARD SEAT There must be one (1) rear facing seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat must be provided with 17.00" deep foam cushions designed with EVC (elastomeric vibration control). The seat back must be an SCBA back style with 5 degree fixed recline angle. The SCBA cavity must be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity must be accomplished by unbolting, relocating, and re-bolting it in the desired location. The seat must be furnished with a 3-point, shoulder type seat belt.		
FORWARD FACING CENTER EMS COMPARTMENT A forward facing EMS compartment must be provided in the crew cab at the center position.		

	Bidder Complies	
	Yes	No
The compartment must be 38.50" wide x 60.00" high x 18.00" deep with one (1) Gortite roll up door, non-locking with anodized finish. The clear door opening of the compartment must be 33.25" wide x 50.00" high. The compartment must be constructed of smooth aluminum, and painted to match the cab interior. **Compartment Light** There must be two (2) white LED strip lights, one (1) each side of the compartment opening. The lights must be controlled by an automatic door switch. **SHELVING** There must be two (2) shelves provided. Each shelf must be constructed of 0.090" aluminum with a 1.25" up-turned lip. Shelving must be infinitely adjustable by means of a threaded tightener sliding in a track. The location must be two (2) shelves in the center forward facing EMS cabinet. **SEAT UPHOLSTERY** All seat upholstery must be gray woven with black Imperial 1200 material. **AIR BOTTLE HOLDERS** All SCBA type seats in the cab must have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket must include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp must constrain the SCBA bottle in the seat and must exceed the NFPA standard of 9G. Bracket designs with manual restraints (belts, straps, buckles) that could be inadvertently left unlocked and allow the SCBA to move freely within the cab during an accident, must not be acceptable. There must be a quantity of five (3) SCBA brackets. **SEAT BELTS** All cab and tiller cab (if applicable) seating positions must have red seat belts. To provide quick, easy use for occupants wearing bunker gear, the female buckle and seat belt webbing length must meet or exceed the current edition of NFPA 1901 and CAN/ULC - S515 standards. The 3-point shoulder type seat belts must include height adjustment. This adjustment must optimize the belts effectiveness and comfort for the seated firefighter. The 3-point shoulder type seat belts must be furnished with dual automatic retractors that must provide ease of operation in the normal seating position.		

	Bidder Complies	
	Yes	No
The 3-point shoulder type belts must also include the ReadyReach D-loop assembly to the shoulder belt system. The ReadyReach feature adds an extender arm to the D-loop location placing the D-loop in a closer, easier to reach location. To ensure safe operation, the seats must be equipped with seat belt sensors in the seat cushion and belt receptacle that must activate an alarm indicating a seat is occupied but not buckled. **HELMET STORAGE PROVIDED BY FIRE DEPARTMENT** NFPA 1901, 2016 edition, section 14.1.7.4.1 requires a location for helmet storage be provided. There is no helmet storage on the apparatus as manufactured. The fire department must provide a location for storage of helmets. **CAB DOME LIGHTS** There must be four (4) Weldon 808* series, dual LED dome lights with black bezels provided. Two (2) lights must be mounted above the inside shoulder of the driver and officer and two (2) lights must be installed and located, one (1) on each side of the crew cab. The color of the LED's must be red and white . The white LED's must be controlled by the door switches and the lens switch. The color LED's must be controlled by the lens switch. **PORTABLE HAND LIGHTS, PROVIDED BY FIRE DEPARTMENT** NFPA 1901, 2016 edition, section 5.9.4 requires two portable hand lights mounted in brackets fastened to the apparatus. The hand lights are not on the apparatus as manufactured. The fire department must provide and mount these hand lights. **CAB INSTRUMENTATION** The cab instrument panel must be a molded ABS panel and include gauges, telltale indicator lamps, control switches, alarms, and a diagnostic panel. The function of the instrument panel controls and switches must be identified by a label adjacent to each item. Actuation of the headlight switch must illuminate the labels in low light conditions. Telltale indicator lamps must not be illuminated unless necessary. The cab instruments and controls must be conveniently located within the forward cab section, forward of the driver. The gauge assembly and switch panels are designed to be removable for ease of service and low cost of ownership. **GAUGES** The gauge panel must include the following ten (10) black faced gauges with black bezels to monitor vehicle performance:		

	Bidder Complies	
	Yes	No

- Voltmeter gauge (volts):
  - Low volts (11.8 VDC)
    - Amber telltale light on indicator light display with steady tone alarm
  - High volts (15.5 VDC)
    - Amber telltale light on indicator light display with steady tone alarm
- Engine Tachometer (RPM)
- Speedometer MPH (Major Scale), KM/H (Minor Scale)
- Fuel level gauge (Empty - Full in fractions):
  - Low fuel (1/8 full)
    - Amber indicator light in gauge dial with steady tone alarm
- Engine Oil pressure Gauge (PSI):
  - Low oil pressure to activate engine warning lights and alarms
    - Red indicator light in gauge dial with steady tone alarm
- Front Air Pressure Gauges (PSI):
  - Low air pressure to activate warning lights and alarm
    - Red indicator light in gauge dial with steady tone alarm
- Rear Air Pressure Gauges (PSI):
  - Low air pressure to activate warning lights and alarm
    - Red indicator light in gauge dial with steady tone alarm
- Transmission Oil Temperature Gauge (Fahrenheit):
  - High transmission oil temperature activates warning lights and alarm
    - Amber indicator light in gauge dial with steady tone alarm
- Engine Coolant Temperature Gauge (Fahrenheit):
  - High engine temperature activates an engine warning light and alarms
    - Red indicator light in gauge dial with steady tone alarm
- Diesel Exhaust Fluid Level Gauge (Empty - Full in fractions):
  - Low fluid (1/8 full)
    - Amber indicator light in gauge dial

INDICATOR LAMPS

To promote safety, the following telltale indicator lamps must be located on the instrument panel in clear view of the driver. The indicator lamps must be "dead-front" design that is only visible when active. The colored indicator lights must have descriptive text or symbols.

The following amber telltale lamps must be present:

- Low coolant
- Trac cntl (traction control) (where applicable)
- Check engine
- Check trans (check transmission)

	Bidder Complies	
	Yes	No

- Air rest (air restriction)
- DPF (engine diesel particulate filter regeneration)
- HET (engine high exhaust temperature) (where applicable)
- ABS (antilock brake system)
- MIL (engine emissions system malfunction indicator lamp) (where applicable)
- Regen inhibit (engine emissions regeneration inhibit) (where applicable)
- Side roll fault (where applicable)
- Front air bag fault (where applicable)
- Aux brake overheat (auxiliary brake overheat) (where applicable)
- The following red telltale lamps must be present:
- Ladder rack down
- Parking brake
- Stop engine
- The following green telltale lamps must be present:
- Left turn
- Right turn
- Battery on
- Ignition
- Aux brake (auxiliary brake engaged) (where applicable)
- The following blue telltale lamps must be present:
- High beam

ALARMS

Audible steady tone warning alarm: A steady audible tone alarm must be provided whenever a warning condition is active.

INDICATOR LAMP AND ALARM PROVE-OUT

A system must be provided which automatically tests telltale indicator lights and alarms located on the cab instrument panel. Telltale indicators and alarms must perform prove-out for 3 to 5 seconds when the ignition switch is moved to the on position with the battery switch on.

CONTROL SWITCHES

For ease of use, the following controls must be provided immediately adjacent to the cab instrument panel within easy reach of the driver. All switches must have backlit labels for low light applications.

Headlight/Parking light switch: A three (3)-position maintained rocker switch must be provided. The first switch position must deactivate all parking and headlights. The second switch position must activate the parking lights. The third switch must activate the headlights.

	Bidder Complies	
	Yes	No
Panel back lighting intensity control switch: A three (3)-position momentary rocker switch must be provided. Pressing the top half of the switch, "Panel Up" increases the panel back lighting intensity and pressing the bottom half of the switch, "Panel Down" decreases the panel back lighting intensity. Pressing the half or bottom half of the switch several times must allow back lighting intensity to be gradually varied from minimum to maximum intensity level for ease of use. Ignition switch: A three (3)-position maintained/momentary rocker switch must be provided. The first switch position must turn off and deactivate vehicle ignition. The second switch position must activate vehicle ignition and must perform prove-out on the telltale indicators and alarms for 3 to 5 seconds after the switch is turned on. A green indicator lamp is activated with vehicle ignition. The third momentary position must temporarily silence all active cab alarms. An alarm "chirp" may continue as long as alarm condition exists. Switching ignition to off position must terminate the alarm silence feature and reset function of cab alarm system. Engine start switch: A two (2)-position momentary rocker switch must be provided. The first switch position is the default switch position. The second switch position must activate the vehicle's engine. The switch actuator is designed to prevent accidental activation. Hazard switch must be provided on the instrument panel or on the steering column. Heater and defroster controls. Turn signal arm: A self-canceling turn signal with high beam headlight controls. Windshield wiper control must have high, low, and intermittent modes. Parking brake control: An air actuated push/pull park brake control. Chassis horn control: Activation of the chassis horn control must be provided through the center of the steering wheel. High idle engagement switch: A maintained rocker switch with integral indicator lamp must be provided. The switch must activate and deactivate the high idle function. The "OK To Engage High Idle" indicator lamp must be active for the high idle function to engage. A green indicator lamp integral to the high idle engagement switch must indicate when the high idle function is engaged. "OK To Engage High Idle" indicator lamp: A green indicator light must be provided next to the high idle activation switch to indicate that the interlocks have been met to allow high idle engagement.		

	Bidder Complies	
	Yes	No
Emergency switching must be controlled by multiple individual warning light switches for various groups or areas of emergency warning lights. An Emergency Master switch provided on the instrument panel that enables or disables all individual warning light switches is included. An additional "Emergency Master" button must be provided on the lower left hand corner of the gauge panel to allow convenient control of the "Emergency Master" system from inside the driver's door when standing on the ground. **CUSTOM SWITCH PANELS** The design of cab instrumentation must allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There must be positions for up to four (4) switch panels in the lower instrument console and up to six (6) switch panels in the overhead visor console. All switches have backlit labels for low light conditions. **DIAGNOSTIC PANEL** A diagnostic panel must be provided and accessible while standing on the ground. The panel must be located inside the driver's side door left of the steering column. The diagnostic panel must allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches must allow ABS systems to provide blink codes should a problem exist. The diagnostic panel must include the following: • ENGINE/TRANSMISSION/ABS J1939 Diagnostic Port • ABS Diagnostic Switch and Indicator - The switch and amber indicator must allow access to diagnostic mode and display of standard ABS system fault blink codes that may be generated by the ABS system • DPF REGEN (Diesel Particulate Filter Regeneration Switch) (where applicable) must be provided to request regeneration of the engine emission system. An amber indicator must be provided on top of the switch that must illuminate in a "CHECK ENGINE" condition • REGEN INHIBIT (Diesel Particulate Filter Regeneration Inhibit Switch) (where applicable) must be provided that must request that regeneration be temporarily prevented. A green indicator must be provided on top of the Regen Inhibit switch that must illuminate when the Regen Inhibit feature is active. Regen Inhibit must be disabled upon cycling of the ignition switch to the off state. **AIR RESTRICTION INDICATOR** A high air restriction warning indicator light (electronic) must be provided.		

	Bidder Complies	
	Yes	No

"DO NOT MOVE APPARATUS" INDICATOR

A flashing red indicator light, located in the driving compartment, must be illuminated automatically per the current NFPA requirements. The light must be labeled "Do Not Move Apparatus If Light Is On."

The same circuit that activates the Do Not Move Apparatus indicator must activate a pulsing alarm when the parking brake is released.

SWITCH PANELS

The built-in switch panels must be located in the lower console or overhead console of the cab. Switches must be rocker type with an indicator light, of which is an integral part of the switch.

WIPER CONTROL

Wiper control must consist of a two (2)-speed windshield wiper control with intermittent feature and windshield washer controls.

SPARE CIRCUIT

There must be two (2) pair of wires, including a positive and a negative, installed on the apparatus.

The above wires must have the following features:

- The positive wire must be connected directly to the battery power
- The negative wire must be connected to ground
- Wires must be protected to 15 amps at 12 volts DC
- Power and ground must terminate officer side dash area and in EMS compartment(s)
- Termination must be with 15 amp, power point plug with rubber cover
- Wires must be sized to 125 percent of the protection

The circuit(s) may be load managed when the parking brake is set.

VEHICLE DATA RECORDER

There must be a vehicle data recorder (VDR) capable of reading and storing vehicle information provided.

The information stored on the VDR can be downloaded through a USB port mounted in a convenient location determined by cab model. A USB cable can be used to connect the VDR to a laptop to retrieve required information. The program to download the information from the VDR will be available to download on-line.

The vehicle data recorder must be capable of recording the following data via hardwired and/or CAN inputs:

	Bidder Complies	
	Yes	No

- Vehicle Speed - MPH
- Acceleration - MPH/sec
- Deceleration - MPH/sec
- Engine Speed - RPM
- Engine Throttle Position - % of Full Throttle
- ABS Event - On/Off
- Seat Occupied Status - Yes/No by Position
- Seat Belt Buckled Status - Yes/No by Position
- Master Optical Warning Device Switch - On/Off
- Time - 24 Hour Time
- Date - Year/Month/Day

Seat Belt Monitoring System

A seat belt monitoring system (SBMS) must be provided. The SBMS must be capable of monitoring up to 10 seating positions indicating the status of each seat position per the following:

- Seat Occupied & Buckled = Green LED indicator illuminated
- Seat Occupied & Unbuckled = Red LED indicator with audible alarm
- No Occupant & Buckled = Red LED indicator with audible alarm
- No Occupant & Unbuckled = No indicator and no alarm

The SBMS must include an audible alarm that must warn that an unbuckled occupant condition exists and the parking brake is released, or the transmission is not in park.

RADIO ANTENNA MOUNT

There must be one (1) standard 1.125", 18 thread antenna-mounting base(s) installed passenger side of cab roof on the cab roof with high efficiency, low loss, coaxial cable(s) routed to behind the officer seat. A weatherproof cap must be installed on the mount.

VEHICLE CAMERA SYSTEM

There must be a color vehicle camera system provided with the following:

- One (1) camera located at the rear of the apparatus, pointing rearward, displayed automatically with the vehicle in reverse.

The camera image must be displayed on a 7.00" LCD display located in view of the driver in the custom dash, per instrument panel layout. The display must include manual camera activation capability and audio from the active camera.

The following components will be included:

	Bidder Complies	
	Yes	No

- One (1) MO700136DC, display
- One (1) SV-CW134639CAI, camera
- All necessary cables

RECESS REAR CAMERA

A rear camera recess must be provided in the center at the rear .

ELECTRICAL POWER CONTROL SYSTEM

A compartment must be provided in or under the cab to house the vehicle's electrical power and signal circuit protection and control components. The power and signal protection and control compartment must contain circuit protection devices and power control devices. Power and signal protection and control components must be protected against corrosion, excessive heat, excessive vibration, physical damage and water spray.

Serviceable components must be readily accessible.

Circuit protection devices, which conform to SAE standard, must be utilized to protect each circuit. All circuit protection devices must be sized to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers must be Type-I automatic reset (continuously resetting) and conform to SAE J553 or J258. When required, automotive type fuses conforming to SAE J554, J1284, J1888 or J2077 must be utilized to protect electronic equipment.

Power control relays and solenoids must have a direct current (dc) rating of 125 percent of the maximum current for which the circuit is protected.

Visual status indicators must be supplied to identify control safety interlocks and vehicle status. In addition to visual status indicators, audible alarms designed to provide early warning of problems before they become critical must be used.

VOLTAGE MONITOR SYSTEM

A voltage monitor system must be provided to indicate the status of each battery system connected to the vehicle's electrical load. The monitor system must provide visual and audio warning when the system voltage is above or below optimum levels.

POWER AND GROUND STUDS

Spare circuits must be provided in the primary distribution center for two-way radio equipment.

The spare circuits must consist of the following:

- One (1) 12-volt DC, 30 amp battery direct spare
- One (1) 12-volt DC ground and un-fused switched battery stud located in or adjacent to the power distribution center

	Bidder Complies	
	Yes	No

EMI/RFI PROTECTION

The electrical system proposed must include means to control undesired electromagnetic and radio frequency emissions. State of the art electrical system design and components must be used to ensure radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions are suppressed at their source.

The apparatus proposed must have the ability to operate in the electromagnetic environment typically found in fire ground operations. The contractor must be able to demonstrate the EMI and RFI testing has been done on similar apparatus and certifies that the vehicle proposed meets SAE J551 requirements.

EMI/RFI susceptibility must be controlled by applying immune circuit designs, shielding, twisted pair wiring and filtering. The electrical system must be designed for full compatibility with low level control signals and high powered two-way radio communication systems. Harness and cable routing must be given careful attention to minimize the potential for conducting and radiated EMI-RFI susceptibility.

ELECTRICAL

All 12-volt electrical equipment installed by the apparatus manufacturer must conform to modern automotive practices. All wiring must be high temperature crosslink type. Wiring must be run, in loom or conduit, where exposed and have grommets where wire passes through sheet metal. Automatic reset circuit breakers must be provided which conform to SAE Standards. Wiring must be color, function and number coded. Function and number codes must be continuously imprinted on all wiring harness conductors at 2.00" intervals. Exterior exposed wire connectors must be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids.

Electrical wiring and equipment must be installed utilizing the following guidelines:

1. All holes made in the roof must be caulked with silicon, rope caulk is not acceptable. Large fender washers, liberally caulked, must be used when fastening equipment to the underside of the cab roof.
2. Any electrical component that is installed in an exposed area must be mounted in a manner that must not allow moisture to accumulate in it. Exposed area must be defined as any location outside of the cab or body.
3. Electrical components designed to be removed for maintenance must not be fastened with nuts and bolts. Metal screws must be used in mounting these devices. Also a coil of wire must be provided behind the appliance to allow them to be pulled away from mounting area for inspection and service work.

	Bidder Complies	
	Yes	No

4. Corrosion preventative compound must be applied to all terminal plugs located outside of the cab or body. All non-waterproof connections must require this compound in the plug to prevent corrosion and for easy separation (of the plug).
5. All lights that have their sockets in a weather exposed area must have corrosion preventative compound added to the socket terminal area.
6. All electrical terminals in exposed areas must have silicon (1890) applied completely over the metal portion of the terminal.

All lights and reflectors, required to comply with Federal Motor Vehicle Safety Standard #108, must be furnished. Rear identification lights must be recessed mounted for protection. Lights and wiring mounted in the rear bulkheads must be protected from damage by installing a false bulkhead inside the rear compartments.

An operational test must be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

The results of the tests must be recorded and provided to the purchaser at time of delivery.

BATTERY SYSTEM

There must be four (4) 12 volt Exide®, Model 31S950X3W, batteries that include the following features must be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Group 31
- Rating of 3800 CCA at 0 degrees Fahrenheit
- 760 minutes of reserve capacity
- Threaded stainless steel studs

Each battery case must be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover must be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery must consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

BATTERY SYSTEM

There must be a single starting system with an ignition switch and starter button provided and located on the cab instrument panel.

	Bidder Complies	
	Yes	No

MASTER BATTERY SWITCH

There must be a master battery switch provided within the cab within easy reach of the driver to activate the battery system.

An indicator light must be provided on the instrument panel to notify the driver of the status of the battery system.

BATTERY COMPARTMENTS

Batteries must be placed on non-corrosive mats and be stored in well ventilated compartments located under the cab.

Heavy-duty battery cables must be used to provide maximum power to the electrical system. Cables must be color coded.

Battery terminal connections must be coated with anti-corrosion compound. Battery solenoid terminal connections must be encapsulated with semi-permanent rubberized compound.

JUMPER STUDS

One (1) set of battery jumper studs with plastic color-coded covers must be included on the battery compartments.

BATTERY CHARGER

There must be an IOTA™, Model DSL 75, battery charger with IQ4, controller provided.

The battery charger must be wired to the AC shoreline inlet through an AC receptacle adjacent to this battery charger.

There must be a Kussmaul™, Model #091-94-12, remote indicator included.

Battery charger must be located in the cab behind the driver seat.

The battery charger indicator must be located behind the driver's door on the outside of the cab.

AUTO EJECT FOR SHORELINE

There must be one (1) Kussmaul™, Model 091-55-20-120, 20 amp 120 volt AC shoreline inlet(s) provided to operate the dedicated 120 volt AC circuits on the apparatus.

The shoreline inlet(s) must include red weatherproof flip up cover(s).

There must be a release solenoid wired to the vehicle's starter to eject the AC connector when the engine is starting.

The shoreline(s) must be connected to the battery charger.

There must be a mating connector body supplied with the loose equipment.

	Bidder Complies	
	Yes	No
There must be a label installed near the inlet(s) that state the following: • Line Voltage • Current Ratting (amps) • Phase • Frequency The shoreline receptacle must be located on the driver side of cab, above wheel. **ALTERNATOR** A Delco Remy®, Model 40SI, alternator must be provided. It must have a rated output current of 320 amps, as measured by SAE method J56. The alternator must feature an integral regulator and rectifier system that has been tested and qualified to an ambient temperature of 257 degrees Fahrenheit (125 degrees Celsius). The alternator must be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output. **ELECTRONIC LOAD MANAGEMENT** An electronic load management (ELM) system that monitors the vehicles 12-volt electrical system, and automatically reduces the electrical load in the event of a low voltage condition and by doing so, ensures the integrity of the electrical system. The ELM must monitor the vehicle's voltage while at the scene (parking brake applied). It must sequentially shut down individual electrical loads when the system voltage drops below a preset value. Two (2) separate electrical loads must be controlled by the load manager. The ELM must sequentially re-energize electrical loads as the system voltage recovers. **HEADLIGHTS** There must be four (4) JW Speaker®, rectangular LED lights with heated lens mounted in the front quad style, chrome housing on each side of the cab grille: • the outside light on each side must contain a part number 055***1 low beam module • the inside light on each side must contain a part number 055***1 high beam module • the headlight to include chrome bezels The low beam lights must be activated when the headlight switch is on. The high beam and low beam lights must be activated when the headlight switch and the high beam switch is activated. **DIRECTIONAL LIGHTS** There must be two (2) Whelen, Model 60A00T*R, amber LED populated arrow directional lights provided on the front of the cab, above the headlights. Each light must be housed in the		

	Bidder Complies	
	Yes	No
same quad common bezel as the front warning light. The lens color(s) to be the same as the LEDs. **CAB CLEARANCE/MARKER/ID LIGHTS** There must be five (5) amber LED lights provided to indicate the presence and overall width of the vehicle in the following locations: • Three (3) amber LED identification lights must be installed in the center of the cab above the windshield. • Two (2) amber LED clearance lights must be installed, one (1) on each outboard side of the cab above the windshield. **INTERMEDIATE LIGHT** There must be two (2) Weldon, Model 9186-8580-29, amber LED turn signal marker lights furnished, one (1) each side, in the rear fender panel. The light must double as a turn signal and marker light. **FRONT CAB SIDE DIRECTIONAL/MARKER LIGHTS** There must be two (2) Weldon, Model 9186-8580-29, amber LED lights installed front of the cab door, one (1) on each side of the cab. The lights must activate as marker lights with the headlight switch and directional lights with the corresponding directional circuit. **REAR CLEARANCE/MARKER/ID LIGHTING** There must be a three (3) LED light bar used as identification lights located at the rear of the apparatus per the following: • As close as practical to the vertical centerline • Centers spaced not less than 6.00" or more than 12.00" apart • Red in color • All at the same height There must be two (2) LED lights installed at the rear of the apparatus used as clearance lights located at the rear of the apparatus per the following: • To indicate the overall width of the vehicle • One (1) each side of the vertical centerline • As near the top as practical • Red in color • To be visible from the rear • All at the same height		

	Bidder Complies	
	Yes	No
There must be two (2) LED lights installed on the side of the apparatus used as marker lights as close to the rear as practical per the following: • To indicate the overall length of the vehicle • One (1) each side of the vertical centerline • As near the top as practical • Red in color • To be visible from the side • All at the same height There must be two (2) red reflectors located on the rear of the truck facing to the rear. One (1) each side, as far to the outside as practical, at a minimum of 15.00", but no more than 60.00", above the ground. There must be two (2) red reflectors located on the side of the truck facing to the side. One (1) each side, as far to the rear as practical, at a minimum of 15.00", but no more than 60.00", above the ground. Per FMVSS 108 and CMVSS 108 requirements. **REAR FMVSS LIGHTING** The rear stop/tail and directional LED lighting must consist of the following: • Two (2) Whelen®, Model M6BTT, red LED stop/tail lights • Two (2) Whelen, Model M6T, amber LED arrow turn lights The lights must be provided with clear lenses. The lights must be mounted in a polished combination housing. There must be two (2) Whelen Model M6BUW, LED backup lights provided in the tail light housing. **LICENSE PLATE BRACKET** There must be one (1) license plate bracket mounted on the rear of the body. A white LED light must illuminate the license plate. A polished stainless steel light shield must be provided over the light that must direct illumination downward, preventing white light to the rear.		

	Bidder Complies	
	Yes	No

LIGHTING BEZEL

There must be two (2) Whelen, Model M6FCV4P, four (4) place chromed ABS housings with Pierce logos provided for the rear M6 series stop/tail, directional, back up, scene lights or warning lights.

BACK-UP ALARM

A PRECO, Model 1040, solid-state electronic audible back-up alarm that actuates when the truck is shifted into reverse must be provided. The device must sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum ten (10) dBA above surrounding environmental noise levels.

CAB PERIMETER SCENE LIGHTS

There must be four (4) Amdor Model AY-9500-012, 12.00" white LED strip lights provided.

- One (1) under the driver's side cab access step.
- One (1) under the passenger's side cab access step.
- One (1) under the passenger's side crew cab access step.
- One (1) under the driver's side crew cab access step.

The lights must be activated when the battery switch is on and the respective door is open and whenever control has been selected for the body perimeter lights.

PUMP HOUSE PERIMETER LIGHTS

There must be two (2) Amdor LumaBar H2O, Model AY-9500-020, 20.00" LED weatherproof strip lights with brackets provided under the pump panel running boards, one (1) each side.

The lights must be controlled by the same means as the body perimeter lights.

BODY PERIMETER SCENE LIGHTS

There must be two (2) Amdor LumaBar H2O™, Model AY-9500-020, 20.00" 12 volt DC LED strip lights provided at the rear step area of the body, one (1) each side shining to the rear.

The perimeter scene lights must be activated when the parking brake is applied.

STEP LIGHTS

Four (4) white LED step lights must be provided. One (1) step light must be provided on each side, on the front compartment face and two (2) step lights at the rear to illuminate the tailboard.

In order to ensure exceptional illumination, each light must provide a minimum of 25 foot-candles (fc) covering an entire 15.00" x 15.00" square placed 10.00" below the light and a minimum of 1.5 fc covering an entire 30.00" x 30.00" square at the same 10.00" distance below the light.

	Bidder Complies	
	Yes	No
These step lights must be actuated with the pump panel light switch. All other steps on the apparatus must be illuminated per the current edition of NFPA 1901. **SIDE SCENE LIGHTS** There must be one (1) Whelen®, Model M9LZC, LED scene light(s) with Model M9FC, chrome flange(s) installed on the side of the apparatus, one (1) high and rearward of driver's side cab door. A control for the light(s) selected above must be the following: • a switch at the driver's side switch panel • opening the driver's side cab or crew cab doors • no additional switch location • no additional switch location These lights may be load managed when the parking brake is applied. **SIDE SCENE LIGHTS** There must be one (1) Whelen, Model M9LZC LED scene light(s) with chrome flange(s) installed on the side of the apparatus, passenger side rear of the crew cab door -high. A control for the light(s) selected above must be the following: a switch at the driver's side switch panel a switch at the passenger's side switch panel opening the passenger's side cab or crew cab doors no additional switch location These lights may be load managed when the parking brake is set. **12 VOLT LIGHTING** There must be one (1) Whelen Model PCP3P, 12 volt DC LED combination spotlight and floodlight(s) with Model PBAPEDD pedestal mounting bracket(s) provided Above compartment D3.. The painted parts of the light assembly to be powder coated Fire Engine red. The light(s) selected above must be controlled by the following: • a switch at the driver's side switch panel. • a switch at the driver's side pump panel.		

	Bidder Complies	
	Yes	No

- no additional switch location.
- no additional switch location.

These light(s) may be load managed when the parking brake is applied.

12 VOLT LIGHTING

There must be one (1) Whelen Model PCP3P, 12 volt DC LED combination spotlight and floodlight(s) with Model PBAPEDD pedestal mounting bracket(s) provided Above compartment P3..

The painted parts of the light assembly to be powder coated Fire Engine red.

The light(s) selected above must be controlled by the following:

- a switch at the driver's side switch panel.
- a switch at the pump operator's panel.
- no additional switch location.
- no additional switch location.

These light(s) may be load managed when the parking brake is applied.

12 VOLT LIGHTING

There must be one (1) Whelen® Model PFS2*, 16,200 lumens 12 volt DC LED light(s) provided on the front visor, centered.

The painted parts of this light assembly to be white.

The light(s) must be controlled by a switch at the driver's side switch panel and by a switch at the passenger's side switch panel.

These light(s) may be load managed when the parking brake is applied.

HOSE BED LIGHTS

There must be four (4) Whelen®, part number 01-066D068-00, 1.87" white 12 volt DC LED lights provided to illuminate the hose bed area.

- One (1) light must be installed on the driver's side of the hose bed 24.00" from the front and as high as practical.
- One (1) light must be installed on the passenger's side of the hose bed, as high as practical and evenly spaced between both lights installed on the driver's side of the hose bed.
- One (1) light must be installed on the driver's side of the hose bed, as high as practical and evenly spaced between both lights installed on the passenger's side of the hose bed.

	Bidder Complies	
	Yes	No
• One (1) light must be installed on the passenger's side of the hose bed 36.00" from the end and as high as practical. This light must also be angled into the hose bed 30 degrees to keep much of the light from shining into ground personals eyes. The lights must be activated by a cup switch at the rear of the apparatus no more than 62.00" from the ground. **HOSE BED LIGHT** There must be one (1) Amdor LumaBar H2O, Model AY-9500-040, 40.00" LED light stick(s) located under flange of front hosebed cross divider.. The light(s) must be activated with the other hosebed lights. **REAR SCENE LIGHT(S)** There must be two (2) Whelen, Model M6ZC, LED scene light(s) with Whelen, Model M6P15C, 15 degree chrome bezel(s) installed at the rear of the apparatus, rear of truck, one each side, low as possible.. The light(s) must be controlled by a switch at the driver's side switch panel and by a cup switch at the driver's side rear bulkhead. The light(s) can be load managed when the parking brake is set. **WALKING SURFACE LIGHT** There must be Model FRP, 4" round black 12 volt DC LED floodlight with bolt mount provided to illuminate the entire designated walking surface on top of the body. The light must be activated when the body step lights are on. **WATER TANK** Booster tank must have a capacity of 750 gallons and be constructed of polypropylene plastic by United Plastic Fabricating, Incorporated. The tank must be stepped in design to allow for a low hosebed. Tank joints and seams must be nitrogen welded inside and out. Tank must be baffled in accordance with NFPA Bulletin 1901 requirements. Baffles must have vent openings at both the top and bottom to permit movement of air and water between compartments. Longitudinal partitions must be constructed of .38" polypropylene plastic and must extend from the bottom of the tank through the top cover to allow for positive welding.		

	Bidder Complies	
	Yes	No
Transverse partitions must extend from 4.00" off the bottom of the tank to the underside of the top cover. All partitions must interlock and must be welded to the tank bottom and sides. Tank top must be constructed of .50" polypropylene. It must be recessed .38" and must be welded to the tank sides and the longitudinal partitions. Tank top must be sufficiently supported to keep it rigid during fast filling conditions. Construction must include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions. Two (2) of the dowels must be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes. A sump that is 8.00" long x 8.00" wide x 6.00" deep must be provided at the bottom of the water tank. Sump must include a drain plug and the tank outlet. Tank must be installed in a fabricated cradle assembly constructed of structural steel. Sufficient crossmembers must be provided to properly support bottom of tank. Crossmembers must be constructed of steel bar channel or rectangular tubing. Tank must "float" in cradle to avoid torsional stress caused by chassis frame flexing. Rubber cushions, .50" thick x 3.00" wide, must be placed on all horizontal surfaces that the tank rests on. Stops or other provision must be provided to prevent an empty tank from bouncing excessively while moving vehicle. Mounting system must be approved by the tank manufacturer. Fill tower must be constructed of .50" polypropylene and must be a minimum of 8.00" wide x 14.00" long. Fill tower must be furnished with a .25" thick polypropylene screen and a hinged cover. An overflow pipe, constructed of 4.00" schedule 40 polypropylene, must be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle. One (1) sleeve must be provided in the water tank for a 3.00" pipe to the rear. **WATER TANK RESTRAINT** A heavy-duty water tank restraint must be provided.		

	Bidder Complies	
	Yes	No
HOSE BED The hose bed must be fabricated of .125"-5052 aluminum with a nominal 38,000 psi tensile strength. The hose bed must be as low as practical. Standard hose bed width must be 68.00" inside. Upper and rear edges of side panels must have a double break for rigidity, a split tube finish must not be acceptable. The upper inside area of the beavertails must be covered with brushed stainless steel to prevent damage to painted surface when hose is removed. Flooring of the hose bed must be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats must be a minimum of 0.50" x 4.50" with spacing between slats for hose ventilation. A cross divider must be provided at the front of the hose bed before the tank transitions from the lower section to the upper section. The divider must run from the top of the side sheet down below the hose bed grating. The hose bed floor must be 72" long hosebed" from the ground when the truck is fully loaded. Hose bed must accommodate Bed #1 - 500' of 2.5", Bed #2 - 1000' of 5.00", Bed #3 - 500' of 2.5" . **HOSE BED DIVIDER** Two (2) adjustable hosebed dividers must be furnished for separating hose. Each divider must be constructed of a .125" brushed aluminum sheet fitted and fastened into a slotted, 1.50" diameter radiused extrusion along the top, bottom, and rear edge. Divider must be fully adjustable by sliding in tracks, located at the front and rear of the hose bed. Divider must be held in place by tightening bolts, at each end. Acorn nuts must be installed on all bolts in the hose bed which have exposed threads. **REINFORCEMENT, HOSEBED DIVIDERS** The two (2) hosebed divider(s) must be reinforced by attaching them to the rear upper handrail with adjustable stanchions.		

	Bidder Complies	
	Yes	No

HOSE BED HOSE RESTRAINT

The hose in the hose bed must be restrained by a black nylon Velcro® strap at the top of the hose bed. At the rear of the hose bed, 2.00" black nylon webbing with a 1.50" x 4.00" box pattern must attach at the top rear outside corners with seat belt buckle fasteners. The webbing must have straps connected with seat belt buckle fasteners located at the rear body sheet below the hose bed.

STOKES BASKET/CARGO STORAGE

A storage compartment for must be located on the on the passenger's side of the hose bed.

A nonadjustable 1/4" single sheet hose bed divider and the body side sheet must form the sides of the compartment. The top of the compartment must be bright aluminum treadplate. The compartment must be full length of the hose bed and divided into two (2) sections.

The rearward section of the compartment must allow for storage of a customer supplied stokes basket and two (2) backboards. The stokes basket measures Stokes 80.50" x 8" x 23" and backboards are 2" x 18" x 72".. The stokes basket and backboard must be stored on edge on top of the hosebed floor grating, with a partition between the stokes basket and back boards. The items must be stored vertically within the compartment. An aluminum treadplate door with D-handle latch hinged along the outboard edge must be furnished at the rear to keep the stokes basket and backboards in the stored position.

The area forward of the stokes basket must be accessible from the top. An aluminum treadplate door with two (2) lift-and-turn latches must be provided. The hose bed grating must form the floor of the compartment.

A cross-divider must be provided just behind the fill tower. The divider must be bolted to the side sheet.

CUTOUT, HANDHOLD

A cutout with radiused corners must be provided at the rear of the two (2) hose bed divider(s).

RUNNING BOARDS

The running boards must be fabricated of aluminum grating, with a serrated top edge, supported by structural steel angle assemblies bolted to the chassis frame rails.

Running boards must be 12.75" deep and are spaced away from the body .50".

A riser must be installed on the body to protect the painted surface from damage by stepping on the running boards.

The entire outer edge of the stepping surface must be covered with bright aluminum treadplate.

	Bidder Complies	
	Yes	No

TAILBOARD

The tailboard must also be constructed of .125" bright aluminum treadplate and spaced .50" from the body, as well as supported by a structural steel assembly.

The tailboard area must be 26.00" deep in the center area and 10.00" deep to the rear of the side compartments. The tailboard must be T-shaped.

The exterior side must be flanged down and in for increased rigidity of tailboard structure.

REAR WALL, SMOOTH ALUMINUM/BODY MATERIAL

The rear facing surfaces of the center rear wall must be smooth aluminum.

The bulkheads, the surface to the rear of the side body compartments, must be smooth and the same material as the body.

Any inboard facing surfaces below the height of the hosebed must be aluminum diamondplate .

TOW BARS

Two (2) tow bars must be installed under the tailboard.

Tow bars must be fabricated of 1.00" CRS bar rolled into a 3.00" radius.

Tow bar assemblies must be constructed of .38" structural angle. When force is applied to the bar, it must be transmitted to the frame rail.

Tow bar assemblies must be designed and positioned to allow up to a 30 degree upward angled pull of 17,000 lb, or a 20,000 lb straight horizontal pull in line with the centerline of the vehicle.

Tow bar design must have been fully tested and evaluated using strain gauge testing and finite element analysis techniques.

HITCH RECEIVER

A hitch receiver must be installed at the rear of the apparatus.

The hitch must be constructed of heavy steel tubing and reinforced to the truck framework, for the receiving portion. This must be a Class III/IV trailer hitch. A class IV rating must be obtained only when a weight distributing hitch is used.

Slide-in portion must be held in place by one (1) safety pin with clip.

The trailer electrical connection must be a seven (7)-way flat blade recreational vehicle connector for trailer wiring compatible with electric brake systems, and a second connector with inverted ground meeting SAE J560 standards providing an auxiliary connection for warning devices.

	Bidder Complies	
	Yes	No

COMPARTMENTATION

Body and compartments must be fabricated of .125", 5052-H32 aluminum.

Side compartments must be an integral assembly with the rear fenders.

Circular fender liners must be provided for prevention of rust pockets and ease of maintenance.

Compartment flooring must be of the sweep out design with the floor higher than the compartment door lip.

The compartment door opening must be framed by flanging the edges in 1.75" and bending out again .75" to form an angle.

Drip protection must be provided above the doors by means of bright aluminum extrusion, formed bright aluminum treadplate or polished stainless steel.

The top of the compartment must be covered with bright aluminum treadplate rolled over the edges on the front, rear and outward side. These covers must have the corners welded.

Side compartment covers must be separate from the compartment tops.

Front facing compartment walls must be covered with bright aluminum treadplate.

All screws and bolts which protrude into a compartment must have acorn nuts on the ends to prevent injury.

UNDERBODY SUPPORT SYSTEM

Due to the severe loading requirements of this pumper a method of body and compartment support suitable for the intended load must be provided.

The backbone of the support system must be the chassis frame rails which is the strongest component of the chassis and is designed for sustaining maximum loads.

The support system must include .375" thick steel vertical angle supports bolted to the chassis frame rails with .625" diameter bolts.

Attached to the bottom of the steel vertical angles must be horizontal angles, with gussets welded to the vertical members, which extend to the outside edge of the body.

A steel frame must be mounted on the top of these supports to create a floating substructure which must result in a 500 lb equipment support rating per lower compartment.

The floating substructure must be separated from the horizontal members with neoprene elastomer isolators. These isolators must reduce the natural flex stress of the chassis from being transmitted to the body.

	Bidder Complies	
	Yes	No

Isolators must have a broad load range, proven viability in vehicular applications, be of a fail safe design and allow for all necessary movement in three (3) transitional and rotational modes.

The neoprene isolators must be installed in a modified V three (3)-point mounting pattern to reduce the natural flex of the chassis being transmitted to the body.

A design with body compartments hanging on the chassis in an unsupported fashion must not be acceptable.

AGGRESSIVE WALKING SURFACE

All exterior surfaces designated as stepping, standing, and walking areas must comply with the required average slip resistance of the current NFPA standards.

LOUVERS

Louvers must be stamped into compartment walls to provide the proper airflow inside the body compartments and to prevent water from dripping into the compartment. Where these louvers are provided, they must be formed into the metal and not added to the compartment as a separate plate.

TESTING OF BODY DESIGN

Body structural analysis must be fully tested. Proven engineering and test techniques such as finite element analysis, stress coating and strain gauging must be performed with special attention given to fatigue, life and structural integrity of the cab, body and substructure.

Body must be tested while loaded to its greatest in-service weight.

The criteria used during the testing procedure must include:

- Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb.
- Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions.
- Driving the vehicle at 35 mph on a washboard road.
- Driving the vehicle at 55 mph on a smooth road.
- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement.

Evidence of actual testing techniques must be made available upon request.

LEFT SIDE COMPARTMENTATION

The left side compartmentation must consist of three rollup door compartments.

	Bidder Complies	
	Yes	No
A full height, rollup door compartment ahead of the rear wheels must be provided. The interior dimensions of this compartment must be 34.50" wide x 66.63" high x 25.88" deep in the lower 25.00" of the compartment and 12.00" deep in the remaining upper portion. The clear door opening must be a minimum of 28.75" wide x 56.88" high. A rollup door compartment over the rear wheels must be provided. The interior dimensions of this compartment must be 66.50" wide x 32.88" high x 12.00" deep. The clear door opening must be a minimum of 58.25" wide x 23.13" high. A full height, rollup door compartment behind the rear wheels must be provided. The interior dimensions of this compartment must be 47.75" wide x 67.63" high x 25.88" deep in the lower 26.00" of height and 12.00" deep in the remaining upper section of the compartment. The clear door opening must be a minimum of 44.75" wide x 57.88" high. The interior height of the compartments must be measured from the compartment floor to the ceiling. The spool of the rollup door at the top of the compartment takes up some usable space. The depth of the compartments must be measured from the back wall to the inside of the door frame. Closing of the door must not require releasing, unlocking, or unlatching any mechanism and must easily be accomplished with one hand. **RIGHT SIDE COMPARTMENTATION** The right side compartmentation must consist of three rollup door compartments. A full height, rollup door compartment ahead of the rear wheels must be provided. The interior dimensions of this compartment must be 34.50" wide x 66.63" high x 25.88" deep in the lower 25.00" of the compartment and 12.00" deep in the remaining upper portion. The clear door opening must be a minimum of 28.75" wide x 56.88" high. A rollup door compartment over the rear wheels must be provided. The interior dimensions of this compartment must be 66.50" wide x 32.88" high x 12.00" deep. The clear door opening must be a minimum of 58.25" wide x 23.13" high. A full height, rollup door compartment behind the rear wheels must be provided. The interior dimensions of this compartment must be 47.75" wide x 67.63" high x 25.88" deep in the lower 26.00" of height and 12.00" deep in the remaining upper section of the compartment. The clear door opening must be a minimum of 44.75" wide x 57.88" high. The interior height of the compartments must be measured from the compartment floor to the ceiling. The spool of the rollup door at the top of the compartment takes up some usable space. The depth of the compartments must be measured from the back wall to the inside of the door frame.		

	Bidder Complies	
	Yes	No
Closing of the door must not require releasing, unlocking, or unlatching any mechanism and must easily be accomplished with one hand. **ROLLUP DOOR, SIDE COMPARTMENTS** There must be six (6) compartment doors installed on the side compartments. The doors must be double faced aluminum construction, painted one (1) color to match the lower portion of the body and manufactured by Gortite®. Lath sections must be an interlocking rib design and must be individually replaceable without complete disassembly of door. Between each slat at the pivoting joint must be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals must allow door to operate in extreme temperatures ranging from 180 to -40 degrees Fahrenheit. Side, top and bottom seals must be provided to resist ingress of dirt and weather and be made of Santoprene. All hinges, barrel clips and end pieces must be nylon 66. All nylon components must withstand temperatures from 300 to -40 degrees Fahrenheit. Hardened plastic must not be acceptable. A polished stainless steel lift bar to be provided for each roll-up door. Lift bar must be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge must be supplied over lift bar for additional area to aid in closing the door. Doors must be constructed from an aluminum box section. The exterior surface of each slat must be flat. The interior surfaces must be concave to provide strength and prevent loose equipment from jamming the door from inside. To conserve space in the compartments, the spring roller assembly must not exceed 3.00" in diameter. A garage style roll door must not be acceptable. The header for the rollup door assembly must not exceed 4.00". A heavy-duty magnetic switch must be used for control of open compartment door warning lights. **COMPARTMENTATION, REAR** A rollup door compartment above the rear tailboard must be provided**.** Interior dimensions of this compartment must be 40.00" wide x 33.63" high x 25.88" deep in the lower 26.00" of the compartment and 15.75" deep in the remaining upper portion. Depth of the compartment must be calculated with the compartment door closed. For a chassis with a rear mounted fuel tank, a louvered removable access panel must be furnished on the back wall of the compartment.		

	Bidder Complies	
	Yes	No
Rear compartment must be open into the rear side compartments. Clear door opening of this compartment must be 33.25" wide x 26.00" high. Closing of the door must not require releasing, unlocking, or unlatching any mechanism and must easily be accomplished with one hand. **ROLLUP DOOR, REAR COMPARTMENT** There must be a rear rollup door. The door must be double faced aluminum construction, an anodized satin finish and manufactured by Gortite®. Lath sections must be an interlocking rib design and must be individually replaceable without complete disassembly of door. Between each slat at the pivoting joint must be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals must allow door to operate in extreme temperatures ranging from 180 to -40 degrees Fahrenheit. Side, top and bottom seals must be provided to resist ingress of dirt and weather and be made of Santoprene. All hinges, barrel clips and end pieces must be nylon 66. All nylon components must withstand temperatures from 300 to -40 degrees Fahrenheit. Hardened plastic must not be acceptable. A polished stainless steel lift bar to be provided for each roll-up door. Lift bar must be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge must be supplied over lift bar for additional area to aid in closing the door. Door must be constructed from an aluminum box section. The exterior surface of each slat must be flat. The interior surface must be concave to provide strength and prevent loose equipment from jamming the door from inside. To conserve space in the compartments, the spring roller assembly must not exceed 3.00" in diameter. A garage style roll door must not be acceptable. The header for the rollup door assembly must not exceed 4.00". A heavy-duty magnetic switch must be used for control of open compartment door warning lights. **DOOR GUARD** There must be seven (7) compartment doors that must include a guard/drip pan designed to protect the roll-up door from damage when in the retracted position and contain any water spray. The guard must be fabricated from stainless steel and installed all body compartments..		

	Bidder Complies	
	Yes	No
COMPARTMENT LIGHTING There must be seven (7) compartment(s) with two (2) white 12 volt DC LED compartment light strips. The dual light strips must be centered vertically along each side of the door framing. There must be two (2) light strips per compartment.The dual light strips must be in all body compartment(s). Any remaining compartments without light strips must have a 6.00" diameter Truck-Lite, Model: 79384 light. Each light must have a number 1076 one filament, two wire bulb. Opening the compartment door must automatically turn the compartment lighting on. **MOUNTING TRACKS** There must be six (6) sets of tracks for mounting shelf(s) in D3, D2, D1, P1, P2 and P3. These tracks must be installed vertically to support the adjustable shelf(s), and must be full height of the compartment. The tracks must be painted to match the compartment interior. **ADJUSTABLE SHELVES** There must be six (6) shelves with a capacity of 500 lb provided. The shelf construction must consist of .188" aluminum painted spatter gray with 2.00" sides. Each shelf must be infinitely adjustable by means of a threaded fastener, which slides in a track. The shelves must be held in place by .12" thick stamped plated brackets and bolts. The location(s) must be in D1 at the transition point, in D3 at the transition point, in P1 at the transition point, in P3 at the transition point, in D2 centered between the floor and ceiling and in P2 centered between the floor and ceiling. **SLIDE-OUT FLOOR MOUNTED TRAY** There must be four (4) floor mounted slide-out tray(s) provided. Each tray must have 2.00" high sides and a minimum capacity rating of 500 lb in the extended position. Each tray must be constructed of aluminum painted spatter gray There must be two undermount-roller bearing type slides rated at 250lb each provided. The pair of slides must have a safety factor rating of 2. To ensure years of dependable service, the slides must be coated with a finish that is tested to withstand a minimum of 1,000 hours of salt spray per ASTM B117.		

	Bidder Complies	
	Yes	No
To ensure years of easy operation, the slides must require no more than a 50lb force for push-in or pull-out movement when fully loaded after having been subjected to a 40 hour vibration (shaker) test under full load. The vibration drive file must have been generated from accelerometer data collected from a heavy truck chassis driven over rough gravel roads in an unloaded condition. Proof of compliance must be provided upon request. Automatic locks must be provided for both the "in" and "out" positions. The trip mechanism for the locks must be located at the front of the tray for ease of use with a gloved hand. The location(s) must be D1, P1, D3 and P3. **RUB RAIL** Bottom edge of the side compartments must be trimmed with a bright aluminum extruded rub rail. Trim must be 2.12" high with 1.38" flanges turned outward for rigidity. The rub rails must not be an integral part of the body construction, which allows replacement in the event of damage. **BODY FENDER CROWNS** Stainless steel fender crowns must be provided around the rear wheel openings. A rubber welting must be provided between the body and the crown to seal the seam and restrict moisture from entering. A dielectric barrier must be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion. **HARD SUCTION HOSE** Hard suction hose must not be required. **HANDRAILS** The handrails must be 1.25" diameter anodized aluminum extrusion, with a ribbed design, to provide a positive gripping surface. Chrome plated end stanchions must support the handrail. Plastic gaskets must be used between end stanchions and any painted surfaces. Drain holes must be provided in the bottom of all vertically mounted handrails. Handrails must be provided to meet NFPA 1901 section 15.8 requirements. The handrails must be installed as noted on the sales drawing.		

	Bidder Complies	
	Yes	No
One (1) vertical handrail, not less than 29.00" long, must be located on the driver side rear beavertail. • One (1) horizontal handrail must be provided above the hose bed at the rear of the apparatus. The hose bed dividers must be tied to the upper handrail or cross bar in order to provide sufficient reinforcement. • One (1) full width horizontal handrail must be provided below the hose bed at the rear of the apparatus. - One (1) handrail, 10.00" long, must be provided mounted above ladder starage compartment, rear of truck, passenger side. **AIR BOTTLE STORAGE (DOUBLE)** A quantity of four (4) air bottle compartments, 15.25" wide x 7.75" tall x 26.00" deep, must be provided on the driver side forward of the rear wheels, on the driver side rearward of the rear wheels, on the passenger side forward of the rear wheels and on the passenger side rearward of the rear wheels . A polished stainless steel door with a chrome plated flush lift & turn latch must be provided to contain the air bottle. A dielectric barrier must be provided between the door hinge, hinge fasteners and the body sheet metal. Inside the compartment, "W" shaped insert formed of composite materials must be provided. **EXTENSION LADDER** There must be a 24' two-section aluminum Duo-Safety Series 900-A extension ladder provided. **ROOF LADDER** There must be a 14' aluminum Duo-Safety Series 775-A roof ladder provided. **LADDER STORAGE** The ladders must be stored between the water tank and the passenger's side compartments. The ladders must extend into the pump compartment just to the rear of the water pump discharges. The ladder storage area must be enclosed as practical by means of sheet metal to protect the ladders from road dirt. The ladders that extend into the pump house must also be enclosed. A black rubber boot must be provided to enclosed the ladders in the gap between the pump house and the body. Each ladder must be stored vertically in a separate stainless steel storage trough. Each stainless steel trough must be lined with Dura-Surf nylon slides.		

	Bidder Complies	
	Yes	No
An aluminum enclosure must be provided at the rear of the body to properly contain the ladders. This enclosure must extend to the rear of the side body compartments. The enclosure must also include a vertically hinged smooth aluminum door with a D-handle latch to access the ladders. **FOLDING LADDER** One (1) 10.00' aluminum, Series 585-A, Duo-Safety folding ladder must be installed in a U-shaped trough inside the ladder storage compartment. **PIKE POLE, 8'** One (1) pike pole, 8' long Duo Safety with a fiberglass handle, must be provided and located in the ladder storage compartment. **PIKE POLE, 6'** One (1) pike pole, 6' long Duo Safety with a fiberglass handle, must be provided and located in the ladder storage compartment. **FOLDING STEPS FRONT OF BODY** Folding steps must be provided full height on the left side and right side body compartments to provide access to the cargo bed. The quantity installed as noted on the sales drawing. The Trident steps must be bright finished, non-skid with a black coating. The steps must incorporate an LED light to illuminate the stepping surface. The steps can be used as a hand hold with two openings wide enough for a gloved hand. **REAR FOLDING STEPS** Bright finished, non-skid folding steps with a black coating must be provided at the rear. Each step must incorporate an LED light to illuminate the stepping surface. The steps can be used as a hand hold with two openings wide enough for a gloved hand. **PUMP** Pump must be a Waterous CSU, **1500 gpm** single (1) stage midship mounted centrifugal type. Pump must be the class "A" type. Pump must deliver the percentage of rated discharge at pressures indicated below: - 100% of rated capacity at 150 psi net pump pressure. -70% of rated capacity at 200 psi net pump pressure. -50% of rated capacity at 250 psi net pump pressure.		

	Bidder Complies	
	Yes	No
Pump body must be close-grained gray iron, bronze fitted, and horizontally split in two (2) sections for easy removal of the entire impeller shaft assembly (including wear rings). Pump must be designed for complete servicing from the bottom of the truck, without disturbing the pump setting or apparatus piping. Pump case halves must be bolted together on a single horizontal face to minimize chance of leakage and facilitate ease of reassembly. No end flanges must be used. Discharge manifold of the pump must be cast as an integral part of the pump body assembly and must provide a minimum of three (3) 3.50" openings for flexibility in providing various discharge outlets for maximum efficiency. The three (3) 3.50" openings must be located as follows: one (1) outlet to the right of the pump, one (1) outlet to the left of the pump, and one (1) outlet directly on top of the discharge manifold. Impeller shaft must be stainless steel, accurately ground to size. It must be supported at each end by sealed, anti-friction ball bearings for rigid precise support. Impeller must have flame plated hubs assuring maximum pump life and efficiency despite any presence of abrasive matter in the water supply. Bearings must be protected from water and sediment by suitable stuffing boxes, flinger rings, and oil seals. No special or sleeve type bearings must be used. Pump must be equipped with a self-adjusting, maintenance-free, mechanical shaft seal. The mechanical seal must consist of a flat, highly polished, spring fed carbon ring that rotates with the impeller shaft. The carbon ring must press against a highly polished stainless steel stationary ring that is sealed within the pump body. In addition, a throttling ring must be pressed into the steel chamber cover, providing a very small clearance around the rotating shaft in the event of a mechanical seal failure. The pump performance must not deteriorate, nor must the pump lose prime, while drafting if the seal fails during pump operation. Wear rings must be bronze and easily replaceable to restore original pump efficiency and eliminate the need to replace the entire pump casing due to wear. **PUMP TRANSMISSION** The pump transmission must be made of a three (3) piece, aluminum, horizontally split casing. Power transfer to pump must be through a high strength Morse HY-VO silent drive chain. By the use of a chain rather than gears, 50% of the sprocket must be accepting or transmitting torque, compared to two (2) or three (3) teeth doing all the work.		

	Bidder Complies	
	Yes	No
Drive shafts must be 2.35" diameter hardened and ground alloy steel and supported by ball bearings. The case must be designed to eliminate the need for water cooling. **PUMPING MODE** An interlock system must be provided to ensure that the pump drive system components are properly engaged so that the apparatus can be safely operated. The interlock system must be designed to allow stationary pumping only. **AIR PUMP SHIFT** Pump shift engagement must be made by a two (2) position sliding collar, actuated pneumatically (by air pressure), with a three (3) position air control switch located in the cab. A manual back-up shift control must also be located on the left side pump panel. Two (2) indicator lights must be provided adjacent to the pump shift inside the cab. One (1) green light must indicate the pump shift has been completed and be labeled "pump engaged". The second green light must indicate when the pump has been engaged, and that the chassis transmission is in pump gear. This indicator light must be labeled "OK to pump". Another green indicator light must be installed adjacent to the hand throttle on the pump panel and indicate either the pump is engaged and the road transmission is in pump gear, or the road transmission is in neutral and the pump is not engaged. This indicator light must be labeled "Warning: Do not open throttle unless light is on". The pump shift must be interlocked to prevent the pump from being shifted out of gear when the chassis transmission is in gear to meet NFPA requirements. The pump shift control in the cab must be illuminated to meet NFPA requirements. **TRANSMISSION LOCK-UP** The direct gear transmission lock-up for the fire pump operation must engage automatically when the pump shift control in the cab is activated. **AUXILIARY COOLING SYSTEM** A supplementary heat exchange cooling system must be provided to allow the use of water from the discharge side of the pump for cooling the engine water. Heat exchanger must be cylindrical type and must be a separate unit. It must be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger must be plumbed to the master drain valve. **INTAKE RELIEF VALVE** An Elkhart relief valve must be installed on the suction side of the pump preset at 125 psig. Relief valve must have a working range of 75 psig to 250 psig.		

	Bidder Complies	
	Yes	No
Outlet must terminate below the frame rails with a 2.50" National Standard hose thread adapter and must have a "do not cap" warning tag. Control must be located behind an access door at a side pump panel. **PRESSURE CONTROLLER** A Fire Research Pump Boss Model PBA400 pressure governor must be provided. A pressure transducer must be installed in the water discharge manifold on the pump. The display panel must be located at the pump operator's panel. **PRIMING PUMP** The priming pump must be a Trident Emergency Products compressed air powered, high efficiency, multistage venturi based AirPrime System, conforming to standards outlined in the current edition of NFPA 1901. All wetted metallic parts of the priming system are to be of brass and stainless steel construction. One (1) priming control must open the priming valve and start the pump primer. **PUMP MANUALS** There must be a total of two (2) pump manuals provided by the pump manufacturer and furnished with the apparatus. The manuals must be provided by the pump manufacturer in the form of two (2) electronic copies. Each manual must cover pump operation, maintenance, and parts. **PLUMBING, STAINLESS STEEL AND HOSE** All inlet and outlet lines must be plumbed with either stainless steel pipe, flexible polypropylene tubing or synthetic rubber hose reinforced with hi-tensile polyester braid. All hose's must be equipped with brass or stainless steel couplings. All stainless steel hard plumbing must be a minimum of a schedule 10 wall thickness. Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping must be equipped with victaulic or rubber couplings. Plumbing manifold bodies must be ductile cast iron or stainless steel. All piping lines are to be drained through a master drain valve or must be equipped with individual drain valves. All drain lines must be extended with a hose to drain below the chassis frame. All water carrying gauge lines must be of flexible polypropylene tubing.		

	Bidder Complies	
	Yes	No
All piping, hose and fittings must have a minimum of a 500 PSI hydrodynamic pressure rating. **MAIN PUMP INLETS** A 6.00" pump manifold inlet must be provided on each side of the vehicle. The suction inlets must include removable die cast zinc screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump. **MAIN PUMP INLET CAP** The main pump inlets must have National Standard Threads with a long handle chrome cap. The cap must incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception). **VALVES** All ball valves must be Akron® Brass in-line valves. The Akron valves must be the 8000 series heavy-duty style with a stainless steel ball and a simple two-seat design. No lubrication or regular maintenance is required on the valve. Valves must have a **ten (10) year** warranty. **LEFT SIDE INLET** There must be one (1) auxiliary inlet with a 2.50" valve at the left side pump panel, terminating with a 2.50" (F) National Standard hose thread adapter. The auxiliary inlet must be provided with a strainer, chrome swivel and plug. The location of the valve for the one (1) inlet must be recessed behind the pump panel. **INLET CONTROL** The side auxiliary inlet(s) must incorporate a quarter-turn ball valve with the control located at the inlet valve. The valve operating mechanism must indicate the position of the valve. **FRONT INLET PROVISION** Provisions for a front inlet must be provided on the passenger side pump suction manifold. Flange must be capped off for possible addition of front inlet at a later date. **INLET BLEEDER VALVE** A 0.75" bleeder valve must be provided for each side gated inlet. The valves must be located behind the panel with a swing style handle control extended to the outside of the panel. The handles must be chrome plated and provide a visual indication of valve position. The swing handle must provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders must be routed below the chassis frame rails.		

	Bidder Complies	
	Yes	No

TANK TO PUMP

The booster tank must be connected to the intake side of the pump with heavy duty piping and a quarter turn 3.00" full flow line valve with the control remotely located at the operator's panel. Tank to pump line must run straight (no elbows) from the pump into the front face of the water tank and angle down into the tank sump. A rubber coupling must be included in this line to prevent damage from vibration or chassis flexing.

A check valve must be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

TANK REFILL

A 1.50" combination tank refill and pump re-circulation line must be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

LEFT SIDE DISCHARGE OUTLETS

There must be two (2) discharge outlets with a 2.50" valve on the left side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

RIGHT SIDE DISCHARGE OUTLETS

There must be one (1) discharge outlet with a 2.50" valve on the right side of the apparatus, terminating with a 2.50" (M) National Standard hose thread adapter.

LARGE DIAMETER DISCHARGE OUTLET

There must be a 4.00" discharge outlet with a 3.50" Akron Slo-Cloz valve with a 3.00" ball, installed on the right side of the apparatus, terminating with a 4.00" (M) National Standard hose thread adapter. This discharge outlet must be actuated with a lever control at the pump operator's control panel.

FRONT DISCHARGE OUTLET

There must be one (1) 1.50" discharge outlet piped to the front of the apparatus and located in the center bumper tray.

Plumbing must consist of 2.00" piping and flexible hose with a 2.00" ball valve with control at the pump operator's panel. A fabricated weldment made of stainless steel pipe must be used in the plumbing where appropriate. The piping must terminate with a 1.50" NST with 90 degree stainless steel swivel.

There must be Class 1 automatic drains provided at all low points of the piping.

REAR DISCHARGE OUTLET

There must be one (1) discharge outlet piped to the rear of the hose bed, driver's side, installed so proper clearance is provided for spanner wrenches or adapters. Plumbing must consist of 2.50" piping along with a 2.50" full flow ball valve with the control from the pump operator's panel.

	Bidder Complies	
	Yes	No

DISCHARGE CAPS

Chrome plated, rocker lug, caps with vinyl covered cables must be furnished for all discharge outlets.

OUTLET BLEEDER VALVE

A 0.75" bleeder valve must be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

The valves must be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles must be chrome plated and provide a visual indication of valve position. The swing handle must provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders must be located at the bottom of the pump panel. They must be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders must be routed below the chassis frame rails.

LEFT SIDE OUTLET ELBOWS

The 2.50" discharge outlets located on the left side pump panel must be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow must incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

RIGHT SIDE OUTLET ELBOWS

The 2.50" discharge outlets located on the right side pump panel must be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow must incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

REAR OUTLET ELBOWS

The 2.50" discharge outlets located at the rear of the apparatus must be furnished with a 2.50" (F) National Standard hose thread x 2.50" (M) National Standard hose thread, chrome plated, 45 degree elbow.

The elbow must incorporate a thread design to automatically relieve stored pressure in the line when disconnected (no exception).

LARGE DIAMETER OUTLET ELBOWS

The 4.00" outlet must be furnished with a 4.00" (F) National Standard hose thread x 4.00" Storz elbow adapter with Storz cap.

	Bidder Complies	
	Yes	No

DISCHARGE OUTLET CONTROLS

The discharge outlets must incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism must indicate the position of the valve.

If a handwheel control valve is used, the control must be a minimum of a 3.9" diameter stainless steel handwheel with a dial position indicator built in to the center of the handwheel.

DELUGE RISER

A 3.00" deluge riser must be installed above the pump in such a manner that a monitor can be mounted and used effectively. Piping must be installed securely so no movement develops when the line is charged. The riser must be gated and controlled at the pump operator's panel. The outlet must include an Akron valve with a handwheel control.

MONITOR

An Akron Model 3416 monitor must be properly installed on the deluge riser.

The monitor must include both a fixed mounting base and a portable base with one (1) 4.00" Storz inlet.

The monitor must be painted as provided by monitor manufacturer.

NOZZLE, DELUGE

Akron model 5160 Akromatic, manual pattern control fog nozzle must be provided. The nozzle must be rated for 250 to 1250 gallons per minute of flow.

Also included is an Akron model 2499 quad stacked pyrolite, deluge tips and an Akron 3488 pyrolite stream shaper .

The tip sizes must be 1.375", 1.50", 1.75", and 2.00".

The deluge riser must have male National Pipe Threads for mounting the monitor.

CROSSLAY HOSE BEDS

Two (2) crosslays with 1.50" outlets must be provided. Each bed to be capable of carrying 200' of 1.75" double jacketed hose and must be plumbed with 2.00" i.d. pipe and gated with a 2.00" quarter turn ball valve.

Outlets to be equipped with a 1.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The crosslay controls must be at the pump operator's panel.

The center crosslay dividers must be fabricated of 0.25" aluminum and must provide adjustment from side to side. The divider must be unpainted with a brushed finish.

	Bidder Complies	
	Yes	No
Vertical scuffplates,constructed of stainless steel must be provided at the front and rear ends of the bed on each side of vehicle. Crosslay bed flooring must consist of removable perforated brushed aluminum. **2.50" CROSSLAY HOSE BED** One (1) crosslay with 2.50" outlets must be provided. This bed to be capable of carrying 200' of 2.50" double jacketed hose and must be plumbed with 2.50" i.d. pipe and gated with a 2.50" quarter turn ball valve. Outlet to be equipped with a 2.50" National Standard hose thread 90 degree swivel located in the hose bed so that hose may be removed from either side of apparatus. The crosslay control must be at the pump operator's panel. The center crosslay dividers must be fabricated of 0.25" aluminum and must provide adjustment from side to side. The divider must be unpainted with a brushed finish. The remainder of the crosslay bed must be painted job color. Stainless steel vertical scuffplates must be provided at hose bed ends (each side of vehicle). Bottom of hose bed ends (each side) must also be equipped with a stainless steel scuffplate. Crosslay bed flooring must consist of removable perforated brushed aluminum. **CROSSLAY/DEADLAY HOSE RESTRAINT** A black 1.00" nylon webbing design with 2.00" box pattern must be provided across each end of three (3) crosslay/deadlay(s) to secure the hose during travel. The webbing must be permanently attached at the bottom of the crosslay/deadlay opening(s). 1.00" web straps must loop through footman loops located at the opposite end of the permanently attached webbing. The straps must attach with a pair of 1.00" cam buckle fasteners. **CROSSLAY/DEADLAY HOSE RESTRAINT** The crosslay/deadlay hosebed(s) must have two (2) 2.00" wide black nylon straps with Velcro fasteners provided across the top to secure the hose during travel. The straps must extend from the front to back across the top of the hosebed(s). **CROSSLAY 8.00" LOWER THAN STANDARD** The crosslays must be lowered 8.00" from standard. **FOAM CONCENTRATE PROPORTIONING SYSTEM PLUMBING (FUTURE INSTALL)** A foam manifold must be provided for the **future installation** of a foam system. The foam system must be plumbed to for future foam system installation. discharges. The discharges		

	Bidder Complies	
	Yes	No
capable of dispensing foam must be three crosslays,front bumper extension outlet, and rear 2.50" outlet.. A manifold must be provided for the foam ready discharges. The plumbing from the water pump to the foam manifold must be designed to allow the foam system to be added without unnecessary rework. Space must be provided on the pump panel for the possible addition of the foam system controls. **FOAM TANK** The foam tank must be an integral portion of the polypropylene water tank. The cell must have a capacity of 20 gallons of foam with the intended use of Class A foam. The foam cell must not reduce the capacity of the water tank. The foam cell must have a screen in the fill dome and a breather in the lid. **FOAM TANK DRAIN** The foam tank drain must be a 1.00" drain valve located inside the pump compartment accessible through a door on the passenger's side pump panel. **PUMP COMPARTMENT** The pump compartment must be separate from the hose body and compartments so that each may flex independently of the other. It must be a fabricated assembly of steel tubing, angles and channels which supports both the fire pump and the side running boards. The pump compartment must be mounted on the chassis frame rails with rubber biscuits in a four point pattern to allow for chassis frame twist. Pump compartment, pump, plumbing and gauge panels must be removable from the chassis in a single assembly. **PUMP MOUNTING** Pump must be mounted to a substructure which must be mounted to the chassis frame rail using rubber isolators. The mounting must allow chassis frame rails to flex independently without damage to the fire pump. **LEFT SIDE PUMP CONTROL PANELS** All pump controls and gauges must be located at the left (driver's) side of the apparatus and properly identified. Layout of the pump control panel must be ergonomically efficient and systematically organized. The pump operator's control panel must be removable in two (2) main sections for ease of maintenance:		

	Bidder Complies	
	Yes	No
The upper section must contain sub panels for the mounting of the pump pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable). Sub panels must be removable from the face of the pump panel for ease of maintenance. Below the sub panels must be located all valve controls and line pressure gauges. The lower section of the panel must contain all inlets, outlets, and drains. All push/pull valve controls must have 1/4 turn locking control rods with polished chrome plated zinc tee handles. Guides for the push/pull control rods must be chrome plated zinc castings securely mounted to the pump panel. Push/pull valve controls must be capable of locking in any position. The control rods must pull straight out of the panel and must be equipped with universal joints to eliminate binding. **IDENTIFICATION TAGS** The identification tag for each valve control must be recessed in the face of the tee handle. All discharge outlets must have color coded identification tags, with each discharge having its own unique color. Color coding must include the labeling of the outlet and the drain for each corresponding discharge. All line pressure gauges must be mounted directly above the corresponding discharge control tee handles and recessed within the same chrome plated casting as the rod guide for quick identification. The gauge and rod guide casting must be removable from the face of the pump panel for ease of maintenance. The casting must be color coded to correspond with the discharge identification tag. All remaining identification tags must be mounted on the pump panel in chrome plated bezels. The pump panel on the right (passenger's) side must be removable with lift and turn type fasteners. Trim rings must be installed around all inlets and outlets. The trim rings for the side discharge outlets must be color coded and labeled to correspond with the discharge identification tag. **PUMP PANEL CONFIGURATION** The pump panel configuration must be arranged and installed in an organized manner that must provide user-friendly operation. **PUMP AND GAUGE PANEL** The pump and gauge panels must be constructed of aluminum with a black vinyl finish. A polished aluminum trim molding must be provided around each panel.		

	Bidder Complies	
	Yes	No
The passenger's side pump panel must be removable and fastened with swell type fasteners. **PUMP COMPARTMENT LIGHT** There must be one (1) Whelen®, Model 3SC0CDCR, 3.00" white 12 volt DC LED light(s) with Whelen, Model 3FLANGEC, flange(s) installed in the pump compartment. There must be a switch accessible through a door on the pump panel included with this installation. Engine monitoring graduated LED indicators must be incorporated with the pressure controller. Also provided at the pump panel must be the following: - Master Pump Drain Control **VACUUM AND PRESSURE GAUGES** The pump vacuum and pressure gauges must be liquid filled and manufactured by Class 1 Incorporated ©. The gauges must be a minimum of 4.00" in diameter and must have white faces with black lettering, with a pressure range of 30.00"-0-600#. Gauge construction must include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut. The pump pressure and vacuum gauges must be installed adjacent to each other at the pump operator's control panel. Test port connections must be provided at the pump operator's panel. One (1) must be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They must have 0.25 in. standard pipe thread connections and non-corrosive polished stainless steel or brass plugs. They must be marked with a label. This gauge must include a 10 year warranty against leakage, pointer defect, and defective bourdon tube. **PRESSURE GAUGES** The individual "line" pressure gauges for the discharges must be interlube filled and manufactured by Class 1©. They must be a minimum of 2.00" in diameter and must have white faces with black lettering. Gauge construction must include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.		

	Bidder Complies	
	Yes	No

Gauges must have a pressure range of 30"-0-400#.

The individual pressure gauge must be installed as close to the outlet control as practical.

This gauge must include a 10 year warranty against leakage, pointer defect, and defective bourdon tube.

WATER LEVEL GAUGE

There must be an electronic water level gauge provided on the operator's panel that registers water level by means of five (5) colored LED lights. The lights must be durable, ultra-bright five (5) LED design viewable through 180 degrees. The water level indicators must be as follows:

- 100 percent = Green
- 75 percent = Yellow
- 50 percent = Yellow
- 25 percent = Yellow
- Refill = Red

The light must flash when the level drops below the given level indicator to provide an eighth of a tank indication. To further alert the pump operator, the lights must flash sequentially when the water tank is empty.

The level measurement must be based on the sensing of head pressure of the fluid in the tank.

The display must be constructed of a solid plastic material with a chrome plated die cast bezel to reduce vibrations that can cause broken wires and loose electronic components. The encapsulated design must provide complete protection from water and environmental elements. An industrial pressure transducer must be mounted to the outside of the tank. The field calibratable display measures head pressure to accurately show the tank level.

FUTURE FOAM LEVEL GAUGE

Provision must be provided in the foam cell for the future addition of a foam system and level gauge.

LIGHT SHIELD

There must be a polished, 16 gauge stainless steel light shield installed over the pump operator's panel.

- There must be 12 volt DC white LED lights installed under the stainless steel light shield to illuminate the controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus. These lights must be activated by the pump panel light switch. Additional lights must be included every 18.00" depending on the size of the pump house.

	Bidder Complies	
	Yes	No

- One (1) pump panel light must come on when the pump is in ok to pump mode.

There must be a light activated above the pump panel light switch when the parking brake is set. This is to afford the operator some illumination when first approaching the control panel.

There must be a green pump engaged indicator light activated on at the operator's panel when the pump is shifted into gear from inside the cab.

AIR HORN SYSTEM

There must be two (2) Grover air horns recessed in the front bumper. The horn system must be piped to the air brake system wet tank utilizing 0.38" tubing. A pressure protection valve must be installed in-line to prevent loss of air in the air brake system.

Air Horn Location

The air horns must be located on each side of the bumper, just outside of the frame rails.

AIR HORN CONTROL

The air horns must be actuated by a push button located on officer side instrument panel and by the horn button in the steering wheel. The driver must have the option to control the air horns or the chassis horns from the horn button by means of a selector switch located on the instrument panel.

ELECTRONIC SIREN

A Whelen, Model: 295SLSC1, electronic siren with detachable noise canceling microphone must be provided.

This siren to be active when the battery switch is on and that emergency master switch is on.

Siren head must be located on a swivel bracket mounted on the headliner so that it is accessible to both the driver and officer. The swivel bracket must be capable of rotating a minimum of 180 degrees.

The electronic siren must be controlled on the siren head only. No horn button or foot switches must be required.

SPEAKER

There must be one (1) Whelen®, Model SA315P, black nylon composite, 100-watt, speaker with through bumper mounting brackets and polished stainless steel grille provided. The speaker must be connected to the siren amplifier.

The speaker(s) must be recessed in the center of the front bumper.

	Bidder Complies	
	Yes	No

AUXILIARY MECHANICAL SIREN

A Federal Q2B® siren must be furnished. A siren brake button must be installed on the switch panel.

The control solenoid must be powered up after the emergency master switch is activated.

The mechanical siren must be mounted on the bumper deck plate. It must be mounted on the left side. The siren mounting must include a reinforcement plate.

MECHANICAL SIREN CONTROL

The mechanical siren must be actuated by a push button located on the officer's side instrument panel and by a foot switch on the driver's side.

A second siren brake switch must be installed on the officer side engine tunnel area. The switch must be a chrome push button style.

FRONT ZONE UPPER WARNING LIGHTS

There must be one (1) 72.00" Whelen Freedom IV LED lightbar mounted on the cab roof.

The lightbar must include the following:

- One (1) red flashing LED module in the driver's side end position.
- One (1) red flashing LED module in the driver's side front corner position.
- One (1) white flashing LED module in the driver's side first front position.
- One (1) red flashing LED module in the driver's side second front position.
- One (1) red flashing LED module in the driver's side third front position.
- One (1) red flashing LED module in the driver's side fourth front position.
- Open in the driver's side fifth front position.
- Open in the driver's side sixth front position.
- Open in the passenger's side sixth front position.
- Open in the passenger's side fifth front position.
- One (1) red flashing LED module in the passenger's side fourth front position.
- One (1) red flashing LED module in the passenger's side third front position.
- One (1) red flashing LED module in the passenger's side second front position.
- One (1) white flashing LED module in the passenger's side first front position.
- One (1) red flashing LED module in the passenger's side front corner position.
- One (1) red flashing LED module in the passenger's side end position.

There must be clear lenses included on the lightbar.

There must be a switch in the cab on the switch panel to control this lightbar.

	Bidder Complies	
	Yes	No
The white LEDs must be disabled when the parking brake is applied. The six (6) red flashing LED modules in the front positions may be load managed when the parking brake is applied. **LIGHTS, FRONT ZONE LOWER** Two (2) Whelen model M6*C LED flashing warning lights must be installed on the cab face above the headlights, in a common bezel with the directional lights. The driver's side front warning light to be red. The passenger's side front warning light to be red. Both lights must include a clear lens. There must be a switch located in the cab on the switch panel to control the lights. **HEADLIGHT FLASHER** The high beam headlights must flash alternately between the left and right side. There must be a switch installed in the cab on the switch panel to control the high beam flash. This switch must be live when the battery switch and the emergency master switches are on. The flashing must automatically cancel when the hi-beam headlight switch is activated or when the parking brake is set. **SIDE ZONE LOWER LIGHTING** There must be six (6) Whelen®, Model M6*C, flashing LED warning lights with chrome trim installed per the following: • Two (2) lights, one (1) each side on the bumper extension. The side front lights to be red. • Two (2) lights, one (1) each side above the front wheels. The side middle lights to be red. • Two (2) lights, one (1) each side above rear wheels. The side rear lights to be red. • The lights must include clear lenses. There must be a switch in the cab on the switch panel to control the lights. **REAR ZONE LOWER LIGHTING** There must be two (2) Whelen®, Model M6*C, LED flashing warning lights located at the rear of the apparatus. • The driver's side rear light to be red • The passenger's side rear light to be red		

	Bidder Complies	
	Yes	No
Both lights must include a lens that is clear. There must be a switch located in the cab on the switch panel to control the lights. **REAR/SIDE ZONE UPPER WARNING LIGHTS** There must be two (2) Whelen®, Model L31H*FN, LED warning beacons provided at the rear of the truck, located one (1) each side. There must be a switch located in the cab on the switch panel to control the beacons. The color of the lights must be red LEDs with both domes clear. The rear warning lights must be mounted on top of the compartmentation with all wiring totally enclosed. The rear deck lights must be mounted on the beavertails as high as possible. **TRAFFIC DIRECTING LIGHT** There must be one (1) Whelen®, Model TAL65, 36.00" long x 2.87" high x 2.25" deep, amber LED traffic directing light installed at the rear of the apparatus. The Whelen, Model TACTL5, control head must be included with this installation. The controller must be energized when the battery switch is on. The auxiliary flash not activated. This traffic directing light must be recessed with a stainless steel trim plate at the rear of the apparatus as high as practical. The traffic directing light control head must be located in the driver side overhead switch panel in the right panel position. **LOOSE EQUIPMENT** The following equipment must be furnished with the completed unit: - One (1) bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit **NFPA REQUIRED LOOSE EQUIPMENT PROVIDED BY FIRE DEPARTMENT** The following loose equipment as outlined in NFPA 1901, 2016 edition, section 5.9.3 and 5.9.4 must be provided by the fire department. • 800 ft (60 m) of 2.50" (65 mm) or larger fire hose. • 400 ft (120 m) of 1.50" (38 mm), 1.75" (45 mm), or 2.00" (52 mm) fire hose. • One (1) handline nozzle, 200 gpm (750 L/min) minimum. • Two (2) handline nozzles, 95 gpm (360 L/min) minimum.		

	Bidder Complies	
	Yes	No
• One (1) smoothbore of combination nozzle with 2.50" shutoff that flows a minimum of 250 gpm. • One (1) SCBA complying with NFPA 1981 for each assigned seating position, but not fewer than four (4), mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer. • One (1) spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space(s). • One (1) first aid kit. • Four (4) combination spanner wrenches. • Two (2) hydrant wrenches. • One (1) double female 2.50" (65 mm) adapter with National Hose threads. • One (1) double male 2.50" (65 mm) adapter with National Hose threads. • One (1) rubber mallet, for use on suction hose connections. • Two (2) salvage covers each a minimum size of 12 ft x 14 ft (3.7 m x 4.3 m). • One (1) traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, *Standard for High Visibility Public Safety Vests*, and have a five-point breakaway feature that includes two (2) at the shoulders, two (2) at the sides, and one (1) at the front. • Five (5) fluorescent orange traffic cones not less than 28.00" (711 mm) in height, each equipped with a 6.00" (152 mm) retro-reflective white band no more than 4.00" (152 mm) from the top of the cone, and an additional 4.00" (102 mm) retro-reflective white band 2.00" (51 mm) below the 6.00" (152 mm) band. • Five (5) illuminated warning devices such as highway flares, unless the five (5) fluorescent orange traffic cones have illuminating capabilities. • One (1) automatic external defibrillator (AED). • Four (4) ladder belts meeting the requirements of NFPA 1983, *Standard on Fire Service Life Safety Rope and System Components* (if equipped with an aerial device). • If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, must be carried mounted in brackets fastened to the apparatus. • If none of the pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side must be carried. Any intake connection larger than 3.00" (75 mm) must include a pressure relief device that meets the requirements of 16.6.6. • If the apparatus does not have a 2.50" National Hose (NH) intake, an adapter from 2.50" NH female to a pump intake must be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.		

	Bidder Complies	
	Yes	No

- If the supply hose carried has other than 2.50" National Hose (NH) threads, adapters must be carried to allow feeding the supply hose from a 2.50" NH thread male discharge and to allow the hose to connect to a 2.50" NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

SOFT SUCTION HOSE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 5.8.2.1 requires a minimum of 20' of suction hose or 15' of supply hose must be carried.

Hose is not on the apparatus as manufactured. The fire department must provide suction or supply hose.

DRY CHEMICAL EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 5.9.4 requires one (1) approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department must provide and mount the extinguisher.

WATER EXTINGUISHER PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 5.9.4 requires one (1) 2.5 gallon or larger water extinguisher mounted in a bracket fastened to the apparatus.

The extinguisher is not on the apparatus as manufactured. The fire department must provide and mount the extinguisher.

FLATHEAD AXE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, Section 5.9.4 requires one (1) flathead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department must provide and mount the axe.

PICKHEAD AXE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, Section 5.9.4 requires one (1) pickhead axe mounted in a bracket fastened to the apparatus.

The axe is not on the apparatus as manufactured. The fire department must provide and mount the axe.

PAINT

The exterior custom cab and body painting procedure must consist of a seven (7) step finishing process as follows:

	Bidder Complies	
	Yes	No
1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body must be thoroughly cleaned and prepared for painting. Imperfections on the exterior surfaces must be removed and sanded to a smooth finish. Exterior seams must be sealed before painting. Exterior surfaces that must not be painted include; chrome plating, polished stainless steel, anodized aluminum and bright aluminum treadplate. 2. Chemical Cleaning and Pretreatment - All surfaces must be chemically cleaned to remove dirt, oil, grease, and metal oxides to ensure the subsequent coatings bond well. The aluminum surfaces must be properly cleaned and treated using a high pressure, high temperature 4 step Acid Etch process. The steel and stainless surfaces must be properly cleaned and treated using a high temperature 3 step process specifically designed for steel or stainless. The chemical treatment converts the metal surface to a passive condition to help prevent corrosion. A final pure water rinse must be applied to all metal surfaces. 3. Surfacer Primer - The Surfacer Primer must be applied to a chemically treated metal surface to provide a strong corrosion protective basecoat. A minimum thickness of 2 mils of Surfacer Primer is applied to surfaces that require a Critical aesthetic finish. The Surfacer Primer is a two-component high solids urethane that has excellent sanding properties and an extra smooth finish when sanded. 4. Finish Sanding - The Surfacer Primer must be sanded with a fine grit abrasive to achieve an ultra-smooth finish. This sanding process is critical to produce the smooth mirror like finish in the topcoat. 5. Sealer Primer - The Sealer Primer is applied prior to the Basecoat in all areas that have not been previously primed with the Surfacer Primer. The Sealer Primer is a two-component high solids urethane that goes on smooth and provides excellent gloss hold out when topcoated. 6. Basecoat Paint - Two coats of a high performance, two component high solids polyurethane basecoat must be applied. The Basecoat must be applied to a thickness that must achieve the proper color match. The Basecoat must be used in conjunction with a urethane clear coat to provide protection from the environment. 7. Clear Coat - Two (2) coats of Clear Coat must be applied over the Basecoat color. The Clear Coat is a two-component high solids urethane that provides superior gloss and durability to the exterior surfaces. Lap style and roll-up doors must be Clear Coated to match the body. Paint warranty for the roll-up doors must be provided by the roll-up door manufacture. Each batch of basecoat color must be checked for a proper match before painting of the cab and the body. After the cab and body are painted, the color must verified again to make sure that it matches the color standard. Electronic color measuring equipment must be used to compare the color sample to the color standard entered into the computer. Color specifications must be used to determine the color match. A Delta E reading must be used to determine a good color match within each family color.		

	Bidder Complies	
	Yes	No
All removable items such as brackets, compartment doors, door hinges, and trim must be removed and separately if required, to ensure paint behind all mounted items. Body assemblies that cannot be finish painted after assembly must be finish painted before assembly. The paint finish quality levels for critical areas of the apparatus (cab front and sides, body sides and doors, and boom lettering panels) are to meet or exceed Cadillac/General Motors GMW15777 global paint requirements. Orange peel levels are to meet or exceed the #6 A.C.T.standard in critical areas. These requirements must be met in order for the exterior paint finish to be considered acceptable. The manufacture's written paint standards must be available upon request. **The cab must be two-tone, with the upper section painted #10 white and lower section of the cab and body painted #90 red.** **PAINT - ENVIRONMENTAL IMPACT** Contractor must meet or exceed all current State regulations concerning paint operations. Pollution control must include measures to protect the atmosphere, water and soil. Controls must include the following conditions: • Topcoats and primers must be chrome and lead free. • Metal treatment chemicals must be chrome free. The wastewater generated in the metal treatment process must be treated on-site to remove any other heavy metals. • Particulate emission collection from sanding operations must have a 99.99% efficiency factor. • Particulate emissions from painting operations must be collected by a dry filter or water wash process. If the dry filter is used, it must have an efficiency rating of 98.00%. Water wash systems must be 99.97% efficient • Water from water wash booths must be reused. Solids must be removed on a continual basis to keep the water clean. • Paint wastes are disposed of in an environmentally safe manner. • Empty metal paint containers must be to recover the metal. • Solvents used in clean-up operations must be recycled on-site or sent off-site for distillation and returned for reuse. Additionally, the finished apparatus must not be manufactured with or contain products that have ozone depleting substances. Contractor must, upon demand, present evidence that the manufacturing facility meets the above conditions and that it is in compliance with his State EPA rules and regulations.		

	Bidder Complies	
	Yes	No

PAINT CHASSIS FRAME ASSEMBLY

The chassis frame assembly must be painted black before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc.

Components treated with epoxy E-coat protection prior to paint:

- Two (2) C-channel frame rails

Components that are included with the chassis frame assembly that must be painted not e-coated are:

- Cross members
- Axles
- Suspensions
- Steering gear
- Battery boxes
- Bumper extension weldment
- Frame extensions
- Body mounting angles
- Rear Body support substructure (front and rear)
- Pump house substructure
- Air tanks
- Fuel tank
- Castings
- Individual piece parts used in chassis and body assembly

The E-coat process must meet the technical properties shown.

PAINT, REAR WHEELS

All wheel surfaces, inside and outside of inboard steel wheels only, must be provided with powder coat paint #90 red.

COMPARTMENT INTERIOR PAINT

The interior of compartmentation must be painted with a gray spatter type paint.

REFLECTIVE STRIPES

Three (3) reflective stripes must be provided across the front of the vehicle and along the sides of the body. The reflective band must consist of a 1.00" gold stripe at the top with a 1.00" gap then a 4.00" white stripe with a 1.00" gap and a 1.00" gold stripe on the bottom.

	Bidder Complies	
	Yes	No

REFLECTIVE STRIPE ON CAB FACE

The reflective band provided on the cab face must be located below the stainless steel trim band and above the front bumper.

REAR CHEVRON STRIPING

There must be alternating chevron striping located on the rear-facing vertical surface of the apparatus. The rear surface, excluding the rear compartment door, must be covered.

The colors must be red and fluorescent yellow green diamond grade.

Each stripe must be 6.00" in width.

This must meet the requirements of the current edition of NFPA 1901, which states that 50% of the rear surface must be covered with chevron striping.

CAB DOOR REFLECTIVE STRIPE

A 6.00" x 16.00" fluorescent yellow green diamond grade reflective stripe must be provided across the interior of each cab door. The stripe must be located approximately 1.00" up from the bottom, on the door panel.

This stripe must meet the NFPA 1901 requirement.

LETTERING

Lettering must be provided to match the existing Warwick Fire Department apparatus.

UNDERCOATING, CAB & BODY

The apparatus must be properly treated by an authorized Ziebart dealer.

The underside of the apparatus must be undercoated with an asphalt petroleum based material, dark in color.

The undercoating material utilized on the apparatus must be formulated to resist corrosion and deaden unwanted sound or road noise.

Coating texture must appear firm, flexible, and resistant to abrasion. Minimum dry film thickness must be in the range of 8.00 to 12.00 mils.

The material must be applied to the following areas:

-Body and cab wheel well fender liners, on the back side only.

-Underside of body and cab sheet metal, and structural components.

-Underside and vertical sides of all sheet metal compartmentation, including support

	Bidder Complies	
	Yes	No
angles. -Structural support members under running boards, rear platforms, battery boxes, walkways, etc. -Inside surfaces of the pump heat enclosure. (when installed) -Suspension mounts. -Transmission cooler fittings. -Engine mounts. -Bottom and outside of framerails behind the forward edge of the water pump. Exclusions must be: -Engine -Transmission -Drive lines -PTO's -Schroeder valves and tank drains -Intake valves -Air Horns, sirens and back-up alarms -Framerails forward of the forward edge of the water pump. **FIRE APPARATUS PARTS CD MANUAL** There must be two (2) custom parts manuals for the complete fire apparatus provided in CD format with the completed unit. The manuals must contain the following: • Job number • Part numbers with full descriptions • Table of contents • Parts section sorted in functional groups reflecting a major system, component, or assembly • Parts section sorted in alphabetical order		

	Bidder Complies	
	Yes	No
• Instructions on how to locate parts The manuals must be specifically written for the chassis and body model being purchased. It must not be a generic manual for a multitude of different chassis and bodies. **SERVICE PARTS INTERNET SITE** The service parts information included in these manuals are also available on the factory website. The website offers additional functions and features not contained in this manual, such as digital photographs and line drawings of select items. The website also features electronic search tools to assist in locating parts quickly. **CHASSIS SERVICE CD MANUALS** There must be two (2) CD format chassis service manuals containing parts and service information on major components provided with the completed unit. The manual must contain the following sections: • Job number • Table of contents • Troubleshooting • Front Axle/Suspension • Brakes • EngineTires • Wheels • Cab • Electrical, DC • Air Systems • Plumbing • Appendix The manual must be specifically written for the chassis model being purchased. It must not be a generic manual for a multitude of different chassis and bodies. **CHASSIS OPERATION CD MANUALS** There must be two (2) CD format chassis operation manuals provided. **ONE (1) YEAR MATERIAL AND WORKMANSHIP** Each new piece of apparatus must be provided with a minimum **one (1) year** basic apparatus material and workmanship limited warranty. The warranty must cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service.		

	Bidder Complies	
	Yes	No
A copy of the warranty certificate must be submitted with the bid package (no exception). **ENGINE WARRANTY** A Cummins **five (5) year** limited engine warranty must be provided. A copy of the warranty certificate must be submitted with the bid package. **STEERING GEAR WARRANTY** A Sheppard **three (3) year** limited steering gear warranty must be provided. A copy of the warranty certificate must be submitted with the bid package. **FIFTY (50) YEAR STRUCTURAL INTEGRITY** The chassis frame must be provided with a **fifty (50) year** material and workmanship limited warranty. The warranty must cover the chassis frame as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate must be submitted with the bid package (no exception). **FRONT AXLE THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY** Independent front suspension must be provided with a **three (3) year** material and workmanship limited warranty. The manufacturer's warranty must provide that the independent front suspension and steering gears be free from any defect related to material and workmanship on the portion of the apparatus built by the manufacturer that would arise under normal use and service. A copy of the warranty certificate must be submitted with the bid package (no exception). **REAR AXLE WARRANTY** A Eaton **five (5)-year/100,000 mile** parts and labor warranty must be provided. **ABS BRAKE SYSTEM THREE (3) YEAR MATERIAL AND WORKMANSHIP WARRANTY** A Meritor Wabco™ ABS brake system **three (3) year** limited warranty must be provided. **TEN (10) YEAR STRUCTURAL INTEGRITY** The new cab must be provided with a **ten (10) year** material and workmanship limited warranty. The warranty must cover such portions of the cab built by the manufacturer as being free from structural failures caused by defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate must be submitted with the bid package (no exception). **TEN (10) YEAR PRO-RATED PAINT AND CORROSION** Each new piece of apparatus must be provided with a **ten (10) year** pro-rated paint and corrosion limited warranty on the apparatus cab. The warranty must cover painted exterior surfaces of the		

	Bidder Complies	
	Yes	No
body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service. A copy of the warranty certificate must be submitted with the bid package (no exception). **CAMERA SYSTEM WARRANTY** A fifty four (54) month warranty must be provided for the camera system**.** **COMPARTMENT LIGHT WARRANTY** A ten (10) year material and workmanship limited warranty must be provided for the Pierce 12 volt DC LED strip lights**.** The warranty must cover the LED strip lights to be free from defects in material and workmanship that would arise under normal use. A copy of the warranty certificate must be submitted with the bid package (no exception). **TRANSMISSION WARRANTY** The transmission must have a **five (5) year/unlimited mileage** warranty covering 100 percent parts and labor. The warranty is to be provided by Allison Transmission and not the apparatus builder. **TRANSMISSION COOLER WARRANTY** The transmission cooler must carry a five (5) year parts and labor warranty (exclusive to the transmission cooler). In addition, a collateral damage warranty must also be in effect for the first three (3) years of the warranty coverage and must not exceed $10,000 per occurrence. A copy of the warranty certificate must be submitted with the bid package. **WATER TANK WARRANTY** The UPF poly water tank must be provided with a lifetime material and workmanship limited warranty. A copy of the warranty certificate must be submitted with the bid package (no exception). **TEN (10) YEAR STRUCTURAL INTEGRITY** Each new piece of apparatus must be provided with a **ten (10) year** material and workmanship limited warranty on the apparatus body. The warranty must cover such portions of the apparatus built by the manufacturer as being free from defects in material and workmanship that would arise under normal use and service. A copy of the warranty certificate must be submitted with the bid package (no exception).		

	Bidder Complies	
	Yes	No
ROLL UP DOOR MATERIAL AND WORKMANSHIP WARRANTY A Gortite roll-up door limited warranty must be provided. The mechanical components of the roll-up door must be warranted against defects in material and workmanship for the lifetime of the vehicle. A **six (6) year** limited warranty must be provided on painted and satin roll up doors. A copy of the warranty certificate must be submitted with the bid package. **PUMP WARRANTY** The Waterous pump must be provided with a **five (5) year** material and workmanship limited warranty. A copy of the warranty certificate must be submitted with the bid package (no exception). **TEN (10) YEAR PUMP PLUMBING WARRANTY** The stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system must be warranted for a period of **ten (10) years or 100,000 miles**. This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of delivery. A copy of the warranty certificate must be submitted with the bid package (no exception). **TEN (10) YEAR PRO-RATED PAINT AND CORROSION** Each new piece of apparatus must be provided with a **ten (10) year** pro-rated paint and corrosion limited warranty on the apparatus body. The warranty must cover painted exterior surfaces of the body to be free from blistering, peeling, corrosion, or any other adhesion defect caused by defective manufacturing methods or paint material selection that would arise under normal use and service. A copy of the warranty certificate must be submitted with the bid package (no exception). **VEHICLE STABILITY CERTIFICATION** The fire apparatus manufacturer must provide a certification stating the apparatus complies with NFPA 1901, current edition, section 4.13, Vehicle Stability. The certification must be provided at the time of bid. **ENGINE INSTALLATION CERTIFICATION** The fire apparatus manufacturer must provide a certification, along with a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The certification must be provided at the time of bid.		

	Bidder Complies	
	Yes	No

POWER STEERING CERTIFICATION

The fire apparatus manufacturer must provide a certification stating the power steering system as installed meets the requirements of the component supplier. The certification must be provided at the time of bid.

CAB INTEGRITY CERTIFICATION

The fire apparatus manufacturer must provide a cab crash test certification with this proposal. The certification must state that a specimen representing the substantial structural configuration of the cab has been tested and certified by an independent third party test facility. Testing events must be documented with photographs, real-time and high-speed video, vehicle accelerometers, cart accelerometers, and a laser speed trap. The fire apparatus manufacturer must provide a state licensed professional engineer to witness and certify all testing events. Testing must meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29.

- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.

- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks.

- Roof Crush

The cab must be subjected to a roof crush force of 22,500 lb. This value meets the ECE 29 criteria, and is equivalent to the front axle rating up to a maximum of ten (10) metric tons.

- Side Impact

The same cab must be subjected to dynamic preload where a 13,275-lb moving barrier is slammed into the side of the cab at 5.50 mph, striking with an impact of 13,000 ft-lb of force. This test is part of the SAE J2422 test procedure and more closely represents the forces a cab must see in a rollover incident.

- Frontal Impact

The same cab must withstand a frontal impact of 32,600 ft-lb of force using a moving barrier in accordance with SAE J2420.

- Additional Frontal Impact

The same cab must withstand a frontal impact of 65,200 ft-lb of force using a moving barrier. (Twice the force required by SAE J2420)

	Bidder Complies	
	Yes	No
The same cab must withstand all tests without any measurable intrusion into the survival space of the occupant area. There must be no exception to any portion of the cab integrity certification. Nonconformance will lead to immediate rejection of bid. **CAB DOOR DURABILITY CERTIFICATION** Robust cab doors help protect occupants. Cab doors must survive a 200,000 cycle door slam test where the slamming force exceeds 20 G's of deceleration. The bidder must certify that the sample doors similar to those provided on the apparatus have been tested and have met these criteria without structural damage, latch malfunction, or significant component wear. **WINDSHIELD WIPER DURABILITY CERTIFICATION** Visibility during inclement weather is essential to safe apparatus performance. Windshield wipers must survive a 3 million cycle durability test in accordance with section 6.2 of SAE J198 *Windshield Wiper Systems - Trucks, Buses and Multipurpose Vehicles.* The bidder must certify that the wiper system design has been tested and that the wiper system has met these criteria. **SEAT BELT ANCHOR STRENGTH** Seat belt attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat belt anchor design must withstand 3000 lb of pull on both the lap and shoulder belt in accordance with FMVSS 571.210 Seat Belt Assembly Anchorages. The bidder must certify that each anchor design was pull tested to the required force and met the appropriate criteria. **SEAT MOUNTING STRENGTH** Seat attachment strength is regulated by Federal Motor Vehicle Safety Standards and should be validated through testing. Each seat mounting design must be tested to withstand 20 G's of force in accordance with FMVSS 571.207 Seating Systems. The bidder must certify, at time of delivery, that each seat mount and cab structure design was pull tested to the required force and met the appropriate criteria. **CAB DEFROSTER CERTIFICATION** Visibility during inclement weather is essential to safe apparatus performance. The defroster system must clear the required windshield zones in accordance with SAE J381 Windshield Defrosting Systems Test Procedure And Performance Requirements - Trucks, Buses, And Multipurpose Vehicles. The bidder must certify that the defrost system design has been tested in a cold chamber and passes the SAE J381 criteria. **CAB HEATER CERTIFICATION** Good cab heat performance and regulation provides a more effective working environment for personnel, whether in-transit, or at a scene. The cab heaters must warm the cab 77 degrees		

	Bidder Complies	
	Yes	No

Fahrenheit from a cold-soak, within 30 minutes when tested using the coolant supply methods found in SAE J381. The bidder must certify, at time of delivery, that a substantially similar cab has been tested and has met these criteria.
 	
CAB AIR CONDITIONING PERFORMANCE CERTIFICATION
Good cab air conditioning temperature and air flow performance keeps occupants comfortable, reduces humidity, and provides a climate for recuperation while at the scene. The cab air conditioning system must cool the cab from a heat-soaked condition at 100 degrees Fahrenheit to an average of 78 degrees Fahrenheit in 30 minutes. The bidder must certify that a substantially similar cab has been tested and has met these criteria.
 	
AMP DRAW REPORT
The bidder must provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.
 	
The manufacturer of the apparatus must provide the following:
 	
• Documentation of the electrical system performance tests.
• A written load analysis, which must include the following:
  ○ The nameplate rating of the alternator.
  ○ The alternator rating under the conditions specified per:
  ▪ Applicable NFPA 1901 or 1906 (Current Edition).
  ○ The minimum continuous load of each component that is specified per:
  ▪ Applicable NFPA 1901 or 1906 (Current Edition).
  ○ Additional loads that, when added to the minimum continuous load, determine the total connected load.
  ○ Each individual intermittent load.
 	
All of the above listed items must be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).		