Gladstone Public Safety

Pumper - Tanker Bid Specifications

	Yes	No

INTENT OF SPECIFICATION

The following specifications describe requirements for design, engineering, construction, and delivery, to the purchaser, a quality fire apparatus manufactured to withstand the severe and continuous use encountered during emergency service.

Each bidder shall furnish satisfactory evidence of its ability to construct the apparatus specified, and shall state the location of the factory where the apparatus shall be built. Bids will only be considered from companies that have established a reputation in the field of emergency vehicle manufacturing.

Each bid must be accompanied by a set of detailed contractors specifications providing a detailed description of the apparatus and equipment proposed. Specifications shall include size, location, type, and model of major component parts being furnished. Detailed information shall be provided on the materials and methods used to construct the apparatus being proposed. Any bidder who fails to submit detailed construction specifications shall be considered non-responsive and shall render their proposal ineligible for award.

The successful bidder shall be solely responsible for the design, construction and material used in the construction of the vehicle.

Each bidder shall supply with their bid a detailed drawing consisting of driver side, passenger side and rear views of the apparatus. This drawing shall be representative of the apparatus that is being bid. The drawing must include, but not be limited to all principle dimensions (height, length, and width). Pictures or brochures are also encouraged that represent the quality and methods of construction being proposed.

EXCEPTIONS OR CLARIFICATIONS

Each bidder response shall include a returned copy of this RFQ “Request for Quotation” with the YES / NO column checked for compliance to specification. All exceptions no mater how minor must be marked in the NO column.

The exception or clarification shall be noted on a separate page titled “Exceptions” giving reference to the page number and location in this document where the exception or clarification is taken. The area of this document that is impacted by the exception or clarification shall be marked or highlighted. All exceptions or clarifications shall be defined with details as to the proposed alternative referencing manufacturer and model where appropriate. A full word for word written comparison must be included within the bid for any exceptions listed.

Each exception will be considered by the degree of impact and total effect on the bid. Bids with no exceptions may be given preference over those with exceptions. The purchaser will make the determination which (if any) exceptions are acceptable.

	Yes	No

Failure to follow this method will add a considerable time to the bid review process and may be cause for rejection of bid.

The purchaser will not consider proposals or demonstrators taking total exception to the bid specifications.

BIDDER REQUIREMENTS

The manufacturer of the apparatus must be fully owned and managed by a Parent Company, Corporation, Partnership, LLC, or that is a company 100% held in the United States of America.

Proposals from any manufacturer that is fully or partially owned and/or operated by a Foreign Company, Corporation or Partnership, or any similar type of agreement will be rejected immediately and their bid disqualified.

Bidder shall compute pricing less any local, state, or federal taxes with the understanding that applicable taxes will be added to the proposed bid, unless the purchaser furnishes appropriate tax forms.

Bidder is responsible to see that their bid is submitted on time. **Late bid proposals will not be accepted.**

Bidder shall address and identify their bid proposal as specified in the cover letter.

DESIGN AND WORKMANSHIP

The apparatus shall be designed with due consideration to the nature and distribution of the load to be sustained and to the general service to which the apparatus is to be subjected when placed in service.

The apparatus chassis, body, equipment, and electronics to be delivered under this contract shall meet or exceed the requirements of these specifications along with the Department of Transportation (DOT) standards, Federal Motor Vehicle Safety Standards (FMVSS), and all state and local standards in the state the apparatus is to be delivered and placed in service.

The apparatus shall be designed with great consideration given to overall vehicle weight and weight distribution. A computerized weight distribution calculation shall be included with your bid. The calculation shall include the chassis weight with all fluids and fuels toped off, estimated body weight, a 250-lb. allowance per seat belt for personnel and a ***3,000-lb***. distributed load allowance for equipment. Any bidder who fails to submit weight calculations shall be considered non-responsive and shall render their proposal ineligible for award.

	Yes	No
The apparatus shall be designed and constructed so component parts can be removed for service and repair with standard tools. Any special tools needed to service any component of the apparatus built or supplied by the component manufacturer shall be supplied with the apparatus. During the design and construction, the apparatus manufacturer shall take into consideration the ease of access to the various areas requiring lubrication, inspection, service or adjustment.		
The design, material and workmanship must be of the highest quality in its respective field. Quality control inspections shall be performed at each step of the manufacturing process.		
EVALUATION OF BIDS Bids received will be evaluated by the purchaser. They will be evaluated to the following criteria: • Completeness of the proposal, i.e. the degree to which it responds to all requirements of these specifications. • Manufacturer demonstrated qualifications and capabilities. • Design and engineering of major structural components, including ease of maintenance. • Qualifications and capabilities of the manufacturer to produce the specified apparatus.		
The competency and responsibility of bidders will be considered in making an award. The purchaser may reserve the right to reject any or all bids when such rejection is in the best interest of the purchaser and to reject any bid from a bidder, who in the judgment of the purchaser, is not in a position to perform the contract. The purchaser does not obligate itself to accept the lowest or any bid.		

	Yes	No

APPARATUS PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be conducted with the apparatus fully loaded and a continuous run of thirty (30) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus shall meet these requirements at elevations of 2,000 ft (600 M) above sea level, while stationary on a 6% grade in any direction, with ambient temperature conditions between 32° F (0°C) and 110°F (43°C).

The apparatus, when fully equipped and loaded shall be capable of the following performance while on dry, paved roads that are in good condition:

1) From a standing start, the apparatus shall be able to attain a speed of 35 mph (55 km/h) within 25 seconds on a level paved road without exceeding the maximum governed rpm of the engine.

2) The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level paved highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.

3) The apparatus shall be able to attain a minimum top speed of 50 mph (80 km/h) on a level road.

4) The apparatus, fully loaded, shall be capable of obtaining a speed of 50 mph on a level paved highway with the engine not exceeding its governed rpm (full load).

The maximum top speed of the apparatus shall not exceed the tire manufacturer's maximum speed rating for the tires installed on the apparatus.

INDEPENDENT THIRD PARTY PUMP TEST

The pump shall be tested, approved and certified by an independent third party testing agency at the manufacturer's expense. The test results along with the pump manufacturer's certification of hydrostatic test, the engine manufacturer's certified brake horse power curve and the manufacturer's record of pump construction details shall be provided to the purchaser at delivery.

FAILURE TO MEET TEST

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus.

	Yes	No

WARRANTY

Materials & Workmanship:
The successful bidder shall warrant the fire apparatus manufactured by it to the original purchaser against defects in material and workmanship for a period of one (1) year from the date of delivery to the original purchaser provided the apparatus is used in a normal and reasonable manner.

Polypropylene Water Tank & Body:
The successful bidder shall provide a polypropylene water tank and body from a manufacturer that will provide a manufacturer's direct lifetime warranty to the original purchaser. The warranty shall cover any leaking as a result of weld and/or material cracking, breaking, corrosion or tank material failure. This warranty shall be provided to the original purchaser of the apparatus and shall be subsequent to the apparatus being used in a normal and reasonable manner.

Structural-Subframe:
The successful bidder shall warrant the fire apparatus manufactured by it to the original purchaser a (15) year apparatus structural sub-frame warranty. The warranty shall cover weld and/or metal cracking, breaking or failure for a warranty period of (15) years or 100,000 miles, whichever occurs first after the date of which the vehicle is delivered to the original purchaser provided the apparatus is used in a normal and reasonable manner.

Paint:
The successful bidder shall warrant the fire apparatus manufactured by it to the original purchaser a (5) year paint/corrosion warranty. This warranty shall cover, blistering, peeling, or any other adhesion defects caused by manufacturing methods, or material selection, for a warranty period of (5) years or 100,000 miles, whichever occurs first after the date of which the vehicle is delivered to the original purchaser provided the apparatus is used in a normal and reasonable manner.

Chassis:
The chassis shall be warranted by chassis manufacturer as per the bid chassis manufacturer's issued warranty. The body manufacturer shall not install any items or components that will void any portion of the chassis warranty. If such an item is installed, the body manufacturer or company of which installed that component shall assume the said warranty on that item for the duration of the published standard warranty at that time to the original purchaser.

Fire Pump:
The fire pump shall be provided with a pump manufacturer's factory direct warranty as specified in the pump portion of these specifications.

	Yes	No

Apparatus Accessory Items:
All accessory items shall be covered by the individual manufacturer's specified warranty.

DELIVERY
The apparatus shall be delivered under its own power to Gladstone Public Safety in Gladstone Michigan. (NO EXCEPTIONS)

All final payments will be made on the apparatus after the final inspection and orientation is completed at the manufactures facility.

A qualified and responsible representative of the manufacture shall provide the purchaser and/or employees of the purchaser orientation in the operation, care, and maintenance of the equipment delivered.

The apparatus shall be detail cleaned prior to delivery.

WEIGHT AND LOAD DISTRIBUTION
The apparatus shall comply with the requirements for weight and load distribution as required by the 2009 NFPA 1901 Standard for Automotive Fire Apparatus, *Chapter 4 General Requirements*.

APPARATUS PERFORMANCE
The apparatus shall comply with the apparatus performance, roadability, road tests and serviceability requirements as required by the 2009 NFPA 1901 Standard for Automotive Fire Apparatus, *Chapter 4 General Requirements*.

VEHICLE DATA RECORDER (VDR)
The apparatus shall be provided with an on-board Vehicle Data Recorder (VDR) as required by the 2009 NFPA 1901 Standard for Automotive Fire Apparatus, *Chapter 4 General Requirements*. The VDR must include all seatbelt monitoring as specified in 2009 NFPA 1901 Standard for Automotive Fire Apparatus.

SEAT BELT WARNING MODULE
The apparatus shall be provided with an on-board seat belt warning module and display as required by the 2009 NFPA 1901 Standard for Automotive Fire Apparatus, *Chapter 4 General Requirements*.

	Yes	No

MAXIMUM VEHICLE SPEED
The apparatus shall comply with the maximum speed requirements as required by the 2009 NFPA 1901 Standard for Automotive Fire Apparatus, *Chapter 4 General Requirements*.

NFPA REQUIRED EQUIPMENT
The equipment listed in these specifications is the only equipment the purchasing authority is requiring to be bid with the apparatus. Your equipment bid shall be itemized on a separate pricing sheet and separated out of the apparatus pricing however; the equipment total shall be included in the apparatus bid total.

Equipment that is required in the 2009 NFPA 1901 Standard for Automotive Fire Apparatus *Chapter 5 Pumper Fire Apparatus* that is not listed in this bid specification will be provided and installed by the fire department after the apparatus is delivered.

CRITICAL APPARATUS MEASUREMENTS
The specified measurements have been set by the purchasing authority and are critical to operation and needs of the purchaser. These measurements must not be exceeded without written approval from the purchaser. Measurements exceeding these specifications set by the purchaser at the time of delivery without written permission may be cause for rejection of the vehicle at delivery.

- The ***overall height*** of the completed vehicle shall not exceed **9'-8"**
- The ***overall width*** of the body shall not exceed **99".** This does not include drip rails, chassis components, or non-permanent fixtures.
- The ***overall length*** of the vehicle shall not exceed **35'-0"**.

	Yes	No
<u>FREIGHTLINER M-2 106 CHASSIS:</u> The Fire Department's preference of commercial chassis is Freightliner for uniformity with other apparatus in the area. The chassis provided shall be supplied with all of the equipment listed below and the equipment required by the **2009 NFPA 1901 Standard for Automotive Fire Apparatus, *Chapter 12 Chassis and Vehicle Components*.** The chassis shall be supplied with the following minimum specifications: o M2 106 conventional cab two door chassis o Fiberglass front tilt hood o Chrome front bumper o Chrome or bright finished grill o Front tow hooks o Cummings ISL-350 HP engine developing a minimum of 350 HP at 2,000 RPM, 2200 governed RPM, 1000 LB/FT torque at 1,400 RPM. o Horton drivemaster fan drive with automatic fan control and dash switch. o Cummins exhaust brake integral with variable geometry turbo with on/off dash switch. o 275 amp. Brushless pad alternator with remote battery voltage sense o Cummins turbocharged 18.7 CFM air compressor with internal safety valve o Side hood air intake with NFPA compliant ember screen and fire retardant Donaldson air cleaner o Exhaust, single, horizontal, after treatment device locations to be specified by bidder based on bidders pump and body configuration. Exhaust to exit the after treatment device with a horizontal tail pipe. o Delco 12-volt heavy duty starter with integrated magnetic switch o Two (2) group 31 12-volt maintenance free 2250 CCA threaded stud batteries o Standard battery jumpers o Allison 3000 EVS automatic transmission with PTO provision, left hand and right hand side. o Water to oil transmission cooler o Transmission oil check and fill with electronic oil level check o Synthetic transmission fluid o Wabco ABS with traction control o Brake line air dryer with heater o Air dryer, frame mounted o Automatic drain valves on all tanks		

	Yes	No
o Hendrickson Haulmaax rear suspension, 40,000 pound		
o Hendrickson Haulmaax series steel beams with bar pin		
o Fore/aft and transverse control rods		
o Rear shock absorbers		
o 5.85 rear gear ratio (The apparatus shall be speed governed to 60 MPH before delivery, NO EXCEPTIONS)		
o Driver controlled traction differential – both tandem rear axles		
o Driver controlled interaxle lock		
o 16,000 pound taper leaf front suspension		
o Graphite bronze front suspension bushings with seals		
o Front shock absorbers.		
o The chassis shall have a MINIMUM RATED 56,000 total GVWR		
o Front tires and wheels shall be Michelin XZY-3, 385 / 65 R22.5 radial tires mounted on 10 lug hub piloted Accuride polished aluminum wheels.		
o Rear tires and wheels shall be Michelin XDE M/S 11R 22.5 radial tires mounted on 10 lug hub piloted Accuride aluminum wheels. The outer wheels shall be polished.		
o 50 gallon fuel cell, rectangular aluminum, left hand under cab		
o Fuel filter/water separator with primer pump		
o West coast style stainless steel mirrors, power & heated		
o 8” convex mirrors mounted under primary mirrors		
o Right hand down view mirror		
o Tinted door glass		
o Right and left hand electric powered windows		
o Tinted windshield		
o 2 gallon windshield washer reservoir		
o Standard interior trim		
o Driver and passenger side interior sun visors		
o Forward roof mounted console with upper storage compartment and dual forward cab reading lights		
o Left hand and right hand cup holders		
o Opal gray interior		
o Woodgrain driver instrument panel		

	Yes	No
o Woodgrain center instrument panel		
o Heater, defroster and air conditioner with standard HVAC ducting		
o Main HVAC controls with recirculation switch		
o Heavy duty air conditioner compressor		
o Left hand and right hand power door locks		
o Driver seat, Seats Inc 911 universal series high back air suspension seat with NFPA 1901 seat occupant sensor		
o Passenger seat, Seats Inc 911 universal series high back non-suspension seat with under seat storage and NFPA 1901 seat occupant sensor		
o 3 point high visibility orange seat belts with NFPA 1901 compliant sensors and dash harness.		
o Heavy duty rubber floor mat (No carpeting)		
o Full chassis engine gauges including a volt meter		
o Dash mounted air restriction indicator with graduations		
o Chassis hour gauge		
o AM / FM stereo with two (2) in cab speakers		
o Adjustable tilt and telescoping steering column		
o 18 inch four spoke steering wheel		
o Self-canceling turn signals		
o NFPA exterior grab handles		
o Minimum ground clearance of 8”		
o Cab paint, two tone:		
a) Lower color: L0221EB LT Maroon Met Elite base/clear		
b) Upper color: L0548EB Pearl Fawn Met Elite base/clear		
o Chassis Frame: Black, High Solids Polyurethane Chassis Paint		

	Yes	No

CHASSIS INSPECTION
When the chassis is received, it shall be thoroughly inspected and received to the purchase specifications. During this inspection, particular attention shall be given to the condition of the chassis. This inspection shall include a test drive of the chassis prior to any work being performed. During the test drive, the bare chassis shall be weighted and all systems tested for operation. The driver shall also note any drivability, excessive wind noise or alignment concerns found during the drive. The test drive shall be a minimum of 10 miles to allow the chassis to reach full operation temperatures. Any damage or deficiencies found during testing shall be noted and reported to the chassis dealer for repair.

CHASSIS PREPARATION
After inspection, the chassis shall be checked in and all final adjustments made to prepare the chassis to receive the fire pump, emergency equipment and body. This includes establishing a “clean frame rail status” by relocating any air tanks, fuel tanks or other components that may interfere during the build process. Heat shields and fiberglass heat blanketing shall be installed as needed around the chassis diesel particulate filter and exhaust components that are unable to be relocated.

SIGNS, INSTRUCTION PLATES AND LABELS
The apparatus shall comply with the requirements for required signs, instruction plates and labels as required by the 2009 NFPA 1901 Standard for Automotive Fire Apparatus, *Chapter 4 General Requirements*.

DIESEL PARTICULATE FILTER
The chassis exhaust diesel particulate filter (DPF) location shall be specified by body manufacturer and located by the CHASSIS MANUFACTURER. The DPF must not be relocated by the body builder for any reason.

CHASSIS EXHAUST
The chassis exhaust shall be routed from the DPF to the underside of the apparatus. The exhaust shall exit in front of the rear chassis wheels with a straight tip.

The exhaust plumbing shall be supplied with fiberglass heat blanketing and / or stainless steel heat shields where required. Exhaust system and emissions shall meet the latest federal and state regulations.

STAINLESS STEEL WHEEL TRIM KITS
A set of Real Wheels brand high polished stainless steel will trim kits shall be provided and installed on the chassis ALUMINUM wheels. The wheel trim kit shall include individual lug nut covers, front center wheel hub covers, and a top hat style rear axle covers.

	Yes	No

TIRE PRESSURE INDICATORS (TPI)
Each tire valve stem on the apparatus shall be provided with self-calibrating Real Wheels LED tire pressure indicators (TPI) as required by NFPA.

MUD FLAPS
A pair of heavy duty rubber mud flaps shall be supplied and installed behind the chassis rear wheels. The mud flaps shall be fastened with stainless steel fasteners.

BUMPER EXTENSION
The OEM chassis front bumper shall be removed and the chassis frame rails extended 21". The chassis OEM bumper shall be reused and attached to the front of the frame extension.

GRAVEL SHIELD
A gravel shield shall be constructed from 3/16" knurled aluminum tread bright between the bumper and chassis grill and hood. The gravel shield shall be contour cut to fit up between the trailing edge of the bumper and leading edge of the chassis grill and hood area. The gravel shield shall be properly supported from the underside to prevent flexing and offer support for a firefighter to walk on when cleaning the apparatus.

FRONT BUMPER BIN(S)
The chassis front bumper gravel shield shall be provided with storage bins to store department equipment and hose as specified below. Each bin shall be provided with a hinging diamond plate cover with weather seal and positive latching mechanism to secure the lid when closed and a gas strut to hold the lid open. The lids will not be tied into the door-a-jar system. Each bin shall be provided with Dry-Deck drain tiles and drain holes. Bumper bins shall be as follows:

- One (1) located outboard the chassis frame on the driver side fabricated to 150'-0" of packed 1.75" discharge hose with pistol grip nozzle.
- One (1) located between the chassis frame rails fabricated to store one (1) Warn ZEON® 10 Multi-Mount Winch.
- One (1) located outboard the chassis frame on the passenger side fabricated to store one (1) Kochek FBS60 float strainer.

AIR HORNS
A pair of chrome 24" Grover or equal emergency tone air horns shall be supplied and installed by the body manufacturer. The horns shall be recessed into the chassis front bumper, NOT HOOD MOUNTED. The horns to be plumbed into the chassis air system with equal length 3/8" airline. The horns shall be operated from the following locations:

- Driver side horn lanyard.
- Passenger side horn lanyard.

	Yes	No

RADIO INSTALATION
Two (2) customer supplied radios shall be installed in the apparatus cab by the successful bidder. The radios shall be located on the console in reach of the drive rand officer.

INTERCOM SYSTEM
A two (2) person transmitting SetCom 900 intercom system shall be provided and installed on the apparatus. The system shall include the following:

- One (1) model #IM-900 Master Station System.
- One (1) model RCB-18 Radio interface cable
- One (1) model RIM-900-BAL Radio interface module
- Two (2) #CSB-900W3 Kit, Wireless Headset with base.

CENTER CONSOLE
A center console shall be provided between the driver and passenger bucket seats. The forward portion of this console shall be raised and sloped back to allow for mounting of switches, siren head and other specified equipment to be mounted in the console area. The entire console shall be constructed from (1/8") 5052-H32 smooth aluminum. The console top shall be finished with black Zolatone for a pleasing and durable finished. The top shall hinge forward to provide access to the inside electrical components for service. The following items shall be mounted in the center console:

- Apparatus switch panel
- Siren control
- Door-a-jar light
- Ignition light

CONSOLE STORAGE AREA
The rear portion of the console shall be provided with a storage pocket for clip board and map storage. A bunji style retention band shall be provided across the storage pocket opening to retain stored items.

TANK & BODY
The tank shall be designed to incorporate the hosebed, lower body sides, rear fenders, and compartments. The capacity of the water tank shall be ***2,000 U.S. gallons***. The tank portion of the body shall be a wet side "T" type design.

TANK WARRANTY
The tank shall have a lifetime warranty as supplied by the tank manufacturer.

	Yes	No

TANK & BODY CONSTRUCTION
The tank and body shall be constructed of PT2 polypropylene sheet stock. All polypropylene sheet stock material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection.

The tank shall be designed and baffled in accordance with the latest NFPA 1901 specifications.

All joints and seams shall be welded and tested for maximum strength and integrity. The top of the booster tank shall be fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removability of the tank and body.

SWASH PARTITIONS "BAFFLES"
The transverse swash partitions (baffles) shall be manufactured of (3/8") PT2 polypropylene and extend from approximately (4") off the floor to just under the cover. The longitudinal swash partitions shall be constructed of (3/8") PT2 polypropylene and extend from the floor of the tank through the cover to allow for positive welding and maximum integrity. All swash partitions shall be equipped with vent and air holes to permit movement of air and water between compartments to provide maximum water flow.

TANK FLOOR
The tank floor shall be constructed from (3/4") thick PT2 polypropylene sheet stock. The floor of the tank must be a "T" type trough to maintain quick dump times and minimize the residual water left in the tank after dumping. (NO EXCEPTIONS). The tank floor shall have a clean-out sump pipe with cap. Threaded pipe fittings shall be provided as needed for any tank to pump or tank fill requirements. Anti-whirlpool baffles shall be provided on all tank to pump outlets. All outlets shall be appropriately sized based on tank and pump capacities.

TANK WALLS
The tank walls shall be constructed from smooth finish (3/4") thick PT2 polypropylene sheet stock. The corner between the tank side walls and the front bulk head shall be beveled for a pleasing appearance.

TANK REAR BULK-HEAD
The tank rear walls shall be constructed from smooth finish (1.5") thick PT2 polypropylene sheet stock to provided flexibility in equipment mounting and strength for the rear access ladder.

	Yes	No

FILL TOWER
The fill tower shall be constructed of BLUE (1/2") polypropylene. The fill tower shall be located along the driver side of the hosebed centered front to back of the tank to minimize water slosh when braking. The fill tower shall be a minimum of (15") wide x (15") long furnished with a polypropylene screen and a hinged cover.

VENT / OVERFLOW
A 6" or larger vent / overflow pipe shall be provided to allow filling, dumping and tank water to be drawn from the tank by a fire pump as specified by the National Fire Protection Association's (NFPA) 1901 guidelines for automotive fire apparatus.

The vent / overflow pipe shall vent from the fill-tower and dump under the center of the apparatus behind the rear axle.

DUMP RATE VENTING PERFORMANCE
The venting shall be sized to allow a dump rate of 95% tank capacity in 90 seconds or less

TANK PLUMBING, FITTINGS, DIFFUSERS & SWIRL PLATES
The tank shall be provided with fittings for the tank to pump and direct fill plumbing as specified in these specifications. All tank fills shall be provided with diffusers to defuse water streams discharged into the water tank. The tank to pump shall be provided with an anti-swirl plate to help prevent water swirl and pump cavitation when pumping from the tank.

TANK FOAM CELL
The apparatus poly tank shall include a 20 gallon foam cell integrated into the tank to supply foam to the foam system specified later in these specifications. The foam cell shall be provided with a GREEN top tank fill tower that is clearly designated as a "FOAM FILL"

TANK MOUNTING
The tank shall be installed in a fabricated cradle assembly constructed of 6061 T-6 heavy wall structural aluminum tubing. Sufficient cross members shall be provided to properly support bottom of tank as specified by the tank manufacturer. Cross members shall be constructed of (3") 6061 T-6 American Standard aluminum channel or 6061 T-6 heavy wall rectangular tubing. The entire cradle assembly shall be overlaid with a ¼" white polyethylene sheet before the tank is set to provide an abrasive free buffering surface between the tank and cradle. The tank shall be mounted to the cradle and the cradle mounted to the chassis frame. A polyethylene breaker strip shall also be provided on each chassis frame rail between the chassis frame and the aluminum tank cradle. The mounting system must be approved by the tank manufacturer, no exceptions.

	Yes	No

EQUIPMENT MOUNTING
The tank manufacturer shall be supplied with engineering data to provide all mounting blocks and threaded inserts as required by the apparatus manufacturer. The tank must not be modified by the fire apparatus manufacturer. Equipment mounting shall not void any portion of the lifetime tank warranty.

SUB FRAME & FASTENERS
The entire body sub frame shall be fabricated from (3") 6061-T6 aluminum channel and (¼") aluminum gusset plates. The sub frame shall be a self-supporting unit and be bolted to the chassis frame. "ECK" shall be applied between the chassis frame and sub frame and between any other dissimilar metals. This frame system shall help support the apparatus body and compartments. The sub frame shall be positioned so as to provide a running board height of approximately 22" to 24" when fully loaded.

All truss and hex head bolts used in the assembly of the sub frame shall be hardened (grade 8) fasteners, zinc or cadmium plated for corrosion resistance.

The entire sub frame must be designed in a manner so as not to entrap water and cause deterioration of the frame.

The entire body and sub frame shall be completely independent from the chassis frame and shall be designed to allow for removal in the event the chassis needs to be replaced.

RECEIVER ATTACHMENT POINTS
2" x 2" standard class III "Reese" type receivers shall be installed around the apparatus as follows:

- One shall be located at the front of the apparatus
- One side receiver shall be located at each rear corner of the apparatus.
- One shall be located at the rear of the apparatus.

The front receiver shall be located just below the center of the front bumper. The receiver framework shall attach directly to both chassis frame rails.

The side corner receivers and the rear receiver shall all mount directly to a heavy duty rear steel sub-frame system that is attached directly to both chassis frame rails at the rear of the apparatus.

All of the above receivers will be used with a portable winch for rescue stabilization.

RECEIVER ACCESSORY POWER
Heavy-duty 12 volt positive / negative plugs with weatherproof cover shall be provided at each receiver to power a winch or other accessory items to be used in the receiver points.

	Yes	No

ALUMINUM DIAMOND PLATE OVERLAYS AND TRIM
The compartment tops including the front and rear lower bulkheads shall be overlaid with 3003-H22 bright finish aluminum diamond plate material.

REAR TAILBOARD
The aluminum rear sub structure assembly shall support a (18”) wide tail board. The tail board shall be fabricated from an extruded aluminum open grip step panel to allow full drainage of water from the platform. Tail boards that are supported off the rear of the body and not supported by the sub structure are not acceptable.

REAR WHEEL WELL AREA
The exterior body surface of the rear wheel wells shall be constructed from (1/2”) thick PT2 polypropylene sheet stock. Each rear wheel well shall be supplied with a radius formed PT2 polypropylene fender liner.

REAR FENDER SCBA BOTTLE STORAGE
CPI SCBA bottle storage compartments shall be provided in the rear wheel well areas on the body to provide storage SCBA bottles (SCBA’s are specified in the equipment section of these specifications). Each compartment shall be supplied with a gasketed bushed stainless steel door that is positively latched with a trigger latch. The bottle sleeves shall be formed with a material that will not cause damage to steel, aluminum or composite cylinders. The storage compartment sizes and location shall be as follows:

Driver side; forward the rear wheels:
One (1) AD2001 single bottle compartment shall be provided.

Driver side; between the rear wheels:
One (1) AD2002 dual bottle compartment shall be provided.

Driver side; behind the rear wheels:
One (1) AD2001 single bottle compartment shall be provided.

Passenger side; forward the rear wheels:
One (1) AD2001 single bottle compartment shall be provided.

Passenger side; between the rear wheels:
One (1) AD2002 dual bottle compartment shall be provided.

Passenger side; behind the rear wheels:
One (1) AD2001 single bottle compartment shall be provided.

The above storage compartments will provide storage for up to (8) SCBA bottles in the rear fenders of the apparatus body.

	Yes	No

STAINLESS STEEL FASTENERS
All fasteners used in the construction of the body, attaching components or attaching overlays shall be marine grade stainless steel fasteners unless otherwise noted.

REAR TOW EYE
A single heavy duty rear tow eye assembly shall be installed at the rear of the apparatus. The tow eye shall mount directly to a cross member system that is attached directly to both chassis frame rails. The tow eye shall extend out the rear bulk head of the apparatus below the rear dump.

GENERAL COMPARTMENTATION
The compartments shall be fabricated with the use of PT2 polypropylene sheet stock. The fabrication and assembly process must provide a smooth painted exterior body.

SWEEP OUT COMPARTMENT FLOORS
All compartment floors shall sweep out design to provide easy cleaning and maintenance.

COMPARTMENT SIZES AND LAYOUT
The compartment layout and *approximate* sizes shall be as follows:

COMPARTMENT SIZES, DRIVER SIDE

- Driver side in front of the rear wheels: 72” high x 47” wide x 26” deep full height
  - Approximate door opening size: 63” high x 41” wide
- Driver side high side compartment: 37” high x 140” wide x 14” deep (two door)
  - Approximate door opening size: 29” high x 61” wide (each door opening)
- Driver side in rear of the rear wheels: 32” high x 25” wide x 26” deep
  - Approximate door opening size: 26” high x 19” wide

COMPARTMENT SIZES, PASSENGER SIDE

- Pass. side in front of the rear wheels: 72” high x 47” wide x 26” deep full height
  - Approximate door opening size: 63” high x 41” wide
- Pass. side high side compartment: 37” high x 140” wide x 14” deep (two door)
  - Approximate door opening size: 29” high x 61” wide (each door opening)
- Pass. side in rear of the rear wheels: 32” high x 25” wide x 26” deep
  - Approximate door opening size: 26” high x 19” wide

CABINET VENTS
All compartments shall be vented.

	Yes	No

R.O.M. COMPARTMENT DOORS, NATURAL FINISH
Each compartment shall be supplied with a natural finish Robinson Roll-O-Matic shutter type roll-up compartment door. Doors shall be manufactured and assembled in the United States. All door rollers shall be located in the top front corner of each compartment just behind the upper jamb. The upper compartment door jamb shall be fabricated to insure that the maximum door height is usable.

Each door slat must have interlocking end shoes to prevent slat from moving side-to-side and binding the door. Between each slat must be a co-extruded PVC inner seal to prevent metal-to-metal contact and to repel moisture. This inner seal shall not be visible to detract from appearance of door.

Each door slat shall be double-wall extrusion 1.366" high by .315" thick. The exterior surface to be flat and interior surface shall be concave to prevent loose equipment from interfering with door operation.

LIFT BAR LATCH SYSTEM
Each door shall be held closed with a full width one piece lift bar operable by one hand. A 2” wide finger pull integrated into the bottom rail extrusion for easy one hand opening and closing.

TOP DOOR DRIP RAIL EXTRUSIONS WITH DOOR SEALS
Each R.O.M. roll-up door shall be supplied with an intergraded exterior anodized extruded aluminum drip rail installed across the upper jamb. Each drip rail shall be provided with a non-abrasive seal to seal the top edge of the door form all exterior elements and provided a cleaning system to clean the door of exterior elements as it is opened.

SIDE DOOR SILLS
Each R.O.M. roll-up door opening shall be provided with an anodized extruded aluminum vertical door sill. The door sill shall be provided with a rubber door seal to seal out all exterior elements.

LOWER DOOR JAMB GUARD
Each R.O.M. roll-up door opening shall be provided with an anodized extruded aluminum lower door jamb guard. The door guard shall be provided with a ridge just inside the door seal to help prevent exterior elements from entering the compartment.

COMPARTMENT LIGHT AND DOOR-AJAR SWITCHING
A magnetic cabinet light / door ajar switching system must be integrated in the lift bar handle and the retainer block to signal open door. No mechanical switches or switches inside to the compartment shall be used.

	Yes	No

DOOR LOCATIONS
The apparatus body shall have a total of (8) roll-up door assemblies located in the following positions:

- Driver side front full height compartment
- Driver side high side compartment, two (2) door
- Driver side lower compartment behind the rear wheels
- Passenger side front full height compartment
- Passenger side high side compartment, two (2) door
- Passenger side lower compartment behind the rear wheels

INTERLOCKING PLASTIC DRAIN TILES
All compartment floors shall be supplied with BLACK DRI-DECK® or equal interlocking plastic drain tiles.

FIXED EQUIPMENT STORAGE BOARD
The apparatus shall be equipped with fixed equipment storage boards (wall mounted tool boards) to store department supplied tools and equipment.

Each fixed equipment storage board shall be assembled with PAC Trac 7000 Single Face extrusion material. The material shall be attached to the specified compartment wall with PAC's Z-rail.

Fixed equipment storage boards shall be located as follows:

- One (1) fixed equipment storage board shall populate the back wall of the front high side compartment (L2). The board shall be approximately 60" in length and 30" in height. This storage board shall be provided with 40 PAC Traclok Inserts.

ADJUSTABLE SHELVING
The apparatus shall be supplied with adjustable shelving. Each specified compartment with shelving shall be supplied with an aluminum T-bolt track system to allow for installation of adjustable shelving. The tracks shall allow adjustment of the shelves to within 6" of the floor or upper door opening of each compartment. Each shelf shall be supplied with black interlocking plastic drain tiles. Each shelf shall be fabricated with about a 2" lip on all four sides. Shelving locations shall be as follows:

- Driver side front compartment: Two (2) shelves
- Driver side rear compartment: One (1) shelf
- Passenger side front compartment: Three (3) shelves
- Passenger side rear compartment: One (1) shelf

Note: A total of (7) shelves are to be provided.

	Yes	No

600 POUND, 100% EXTENSION ROLL OUT TRAY

The apparatus shall be equipped with 600 pound, 3 rail 100% extension roll out trays to store department supplied tools and equipment.

Each tray shall be constructed from 3/16" D.A. finished smooth aluminum with a 2" lip on all four sides. Each tray shall be supplied with interlocking plastic drain tiles.

Each tray shall be mounted on a steel Innovative Industries (SM3-MP with HLS), mid-profile, three rail roll-out track designed specifically for this application. The roll-out track assembly shall be provided with Innovative Industries spring locking (HSL) option to lock the tray in both the stored and extended positions. The roll-out track shall be capable of extended to 100% extension and handle 600 pounds of distributed load at full extension.

Each tray shall be supplied with red / white / red DOT reflective tape on all outer three sides to allow it to be seen when extended from the apparatus at night. Trays shall be located as follows:

- One (1) 600 pound, 100% extension roll-out tray shall be mounted to the floor area of the passenger side front compartment. The tray shall go full depth from the back of the compartment to the door and shall be full width of the door opening.

POWDER COATED ROLL-OUT TRACKS

All steel Innovative Industries roll-out tracks specified shall be power-coated BLACK to provide a durable lasting finish. PAINT IS NOT ACCEPTABLE!

SCBA STORAGE

The apparatus shall be provided with a total of (9) Flame Fighter brand or equal SCBA brackets. The brackets shall be located as follows:

- Three (3) shall be located in the driver side back high side compartment
- Three (3) shall be located in the passenger side front high side compartment
- Three (3) shall be located in the passenger side rear high side compartment.

Each bracket shall include two (2) coated spring steel bottle clamps with strap to securely store each pack.

SCBA BOTTLE STORAGE

A wine rack style SCBA bottle storage rack shall be provided HIGH in the driver side front compartment to store up to 3 spare SCBA bottles. Each bottle shall be stored in a plastic sleeve that will not damage or cause excessive wear on composite bottles. The rack shall store the bottles three wide. The rack shall be installed in the compartment as high as possible. The rack shall angle back at around 4 degrees to prevent the bottles from shifting toward the door during travel. Each rack bottle pocket shall include a bottle storage neck strap.

	Yes	No

REAR ACCESS LADDER
A brushed stainless steel top access ladder shall be fabricated and bolted to the rear of the tank to provide safe and easy access to the top of the apparatus. The first step of the rear ladder shall be no more that (18") above the tailboard. All ladder rungs shall be an open punch through grip tread. Knurled rungs will not be acceptable.

HANDRAILS
Access handrails shall be 1 ¼" diameter extruded aluminum handrails. Handrail end and center mounts shall be heavy-duty chrome plated and attached to the apparatus with stainless steel fasteners. A rubber gasket shall be provided between the mount and apparatus body to isolate the different metals from one another. Handrails shall be provided and located as follows:

- Two (2) horizontal access rails, one (1) on each side of pump module located below the crosslay hosebeds.
- Two (2) short horizontal access rails, one (1) shall be located high on each front corner of the body for use with the front body folding steps.
- Two (2) vertical access rails, one (1) at each end of the pump operators cross walk.

FOLDING STEPS WITH LED STEP LIGHTS
All steps shall be NFPA compliant steps for both friction coefficient and size. Ergonomics and firefighter boots shall be considered when mounting all steps. Each step shall be installed with stainless steel hardware. All folding steps shall be provided with a rubber gasket installed between the step and apparatus body to isolate the different metals from one another. Each step shall include a LED step light located above and below each step. Steps shall be provided and located as follows:

- Three (3) folding steps shall be provided on the driver side front of the body to provide access to the crosslay hosebeds
- Three (3) folding steps shall be provided on the passenger side front of the body to provide access to the crosslay hosebeds

REAR 4" FILL VALVE
A 4" fill FFE (Firemen's Friend Engineering) stainless steel check-valve fill assembly with screen shall be placed at an accessible level right of the rear dump valve. The check valve system shall be 100% stainless steel construction with a rubber seal. The check valve shall be located inside the water tank. A 30° down angle with will ease hookup to the specified adapter. A bleeder shall be provided on the supply side of the valve to allow bleeding off excess water or air pressure.

The fill shall terminate with a 5" Storz fitting at 30º with Storz cap.

REAR NEWTON DUMP, STAINLESS STEEL
One (1) manual actuated stainless steel 10" x 10" Newton dump valve (1065-34) shall be installed in the lowest portion of the tank at the rear of the apparatus. The rear dump shall be actuated with a Newton right side actuator.

	Yes	No

DUMP HEIGHT
The rear dump shall allow dumping into a standard 29” high portable tank.

FIRE RESEARCH TANK VISION WATER LEVEL DISPLAY
A Fire Research Tank Vision water level display system shall be provided. All readouts shall be 100% ultra-bright L.E.D. displays. Displays shall be located as follows:

- Apparatus pump operators panel, driver side
- Rear bulkhead of the apparatus in the area of the direct tank fill
- Mini readout in the apparatus cab

MAIN HOSEBED AREA
The tank walls shall continue past the tank lid to form an integrated hosebed area on top of the tank. The hosebed shall be sized and designed to carry the hose loads specified below. The hosebed shall be designed to allow the hose to deploy off the rear of the apparatus. The tank shall have grooving cut into the top poly material to form and integrated hosebed decking allowing the packed hose to drain and allow airflow under the hose for hose ventilation. The exterior walls of the hosebed shall be painted with an automotive finish with the tank. The interior shall remain natural black poly to provide a durable and pleasing appearance. The main hosebed shall be capable of storing the following hose loads:

- 600-0” feet of 5” LDH coupled in 100’-0” lengths
- 600’-0” feet of 3” fire hose coupled in 50’-0” lengths

ADJUSTABLE HOSEBED DIVIDER
The apparatus shall be supplied with an adjustable hosebed divider system to divide the hosebed into individual compartments to store department supplied hose. Each divider shall be constructed from 3/16" D.A. finished smooth aluminum. Each aluminum divider shall have an extruded tee-rail or angle-rail welded to the bottom edge for added strength and durability. Each divider shall be adjustable in a track system that is located at the front and rear of the hosebed. The back edge of each divider shall be radius cut. Hosebed dividers shall be provided as follows:

- One (1) adjustable dividers shall be provided

HOSEBED COVER
A heavy-duty flame retardant vinyl hosebed cover shall be supplied and custom fitted to the apparatus hosebed. A flap cover with Velcro hold down shall be located over the fill tower to allow fill tower access without removing the cover. The cover shall be attached to the apparatus with a bungi and hook system. The rear of the cover shall be provided with a weighted flap to cover the back of the hosebed. The flap shall be attached to the back of the apparatus with a two clip straps to retain the hose in the bed during travel as required by the NFPA. The cover shall be BLACK or RED in color. (Cover color to be determined at the pre-construction meeting)

	Yes	No

TANK STORAGE TUNNEL FOR LONG TOOLS & LADDERS

A through tank storage tunnel shall be designed into the tank to store the items specified below. The equipment shall load and unload off the rear of the apparatus. The storage tunnel shall be provided with an aluminum door chevroned to match the pattern on the back of the apparatus tank. The door shall be supplied with a single positive type trigger latch. A poly or aluminum divider system shall be provided in the storage tunnel that allows each specified item to be loaded and unloaded from the apparatus without disrupting the other stored equipment in this area. The equipment to be stored shall be as follows:

- One (1) 24'-0" Duo-Safety two fly aluminum extension ladder
- One (1) 14'-0" Duo-Safety aluminum roof ladder with folding roof hooks
- One (1) 10'-0" Duo-Safety folding attic ladder
- One (1) 14'-0" or shorter straight handle pike pole
- Two (2) 6" x 13'-0" or shorter lengths of Kochek lightweight suction hose.

TOP MOUNT PUMP CONTROL PANEL

The pump operator's panel shall be a top mount design. This design shall position the pump operator on an operators crosswalk located between the cab and pump module area. This deck shall elevate the pump operator to allow them to oversee the fire scene and also get them off the road way.

PUMP MODULE

The pump module shall be designed to be a free standing module with its own sub frame, super structure and panels. The module shall be attached to the chassis frame with a rubber isolator mount system. This will allow the pump module to set in place without requiring it to be tied into the body, cab or sub frame. Pump modules that are tied into the body, body sub-frame or cab will not be acceptable.

The pump module super structure shall be constructed from 6061 T-6 aluminum extrusions, aluminum structural channel and aluminum heavy wall tubing. The exterior sides of the extruded super structure shall be D.A finished for a pleasing appearance. The super structure shall be gusseted with 5052 H-32 ¼" smooth aluminum gussets welded in place. Gussets shall be located such to prevent any "sea saw" movement in the assembly caused from heavy hose loads in crosslay or speedlay hose beds.

PUMP OPERATORS CROSS WALK WITH COMPARTMENT

A 20" wide pump operator's walkway shall be provided between the apparatus cab and pump module. Each end of the walk-way shall be provided with a small cabinet with a vertical hinged aluminum tread bright door. The interior of each compartment shall be provided with black interlocking plastic drain tiles on the floor. The walkway shall be fabricated with non-slip extruded aluminum material on the main walking surface.

	Yes	No

CAB OVERLAY
The back of the chassis cab shall be provided with an aluminum tread bright overlay to protect the paint from damage caused by the pump operator's gear. The overlay shall extend from the cross walk deck up to just below the rear cab window.

SIDE PUMP MODULE RUNNING BOARDS
Each side of pump module shall be equipped with 12" running boards to aid is accessing the crosswalk and upper crosslays on the apparatus. Each running board shall be fabricated from an NFPA compliant step material. The running boards must be supported by the pump module structure. Running boards that are supported off the body or body sub structure are not acceptable.

HEAT SHIELD
The lower area of the pump and gearbox shall be enclosed with an aluminum heat enclosure. The chassis exhaust shall run through this enclosure to provide heat to the pump and components. The lower "pan" shall be removable for service or extreme heat operations.

PUMP HEATERS
The pump compartment shall be provided with two (2) RedDOT R-3540 hot water heaters plumbed into the chassis engine coolant system to provide over 40,000 BTU's of heat. Each heater shall be provided with a fan that produces 194 CFM. The fans shall direct the heat at the back of the panel to prevent the gauges from freezing. Each fan shall draw no more than 1.8 amps at 13.6 volts DC. A single switch for operation of both heaters shall be provided at the operator's panel. A green light shall be provided to indicate when the heaters are on.

CROSSLAY HOSEBEDS
The apparatus shall be supplied with crosslay hosebeds located over the pump module to store the specified fire hose in a hosebed that can be deployed off of either side of the apparatus. Each crosslay shall be provided with drain tiles in the bottom to allow the packed hose to drain and allow air flow for ventilation. The drain tiles shall be locked in place in the crosslays to eliminate the possibility of them skidding out when the hose is deployed.

The crosslay locations and capacities shall be as follows:

- One (1) front crosslay for 200'-0" of 1.75" discharge fire hose
- One (1) center crosslay for 200'-0" of 1.75" discharge fire hose
- One (1) rear crosslay for 200'-0" of 2.5" discharge fire hose

	Yes	No
CROSSLAY COVER(S) A pair hinging crosslay covers shall be provided over the crosslays, one (1) on each side of the deck monitor. Each cover shall be fabricated from 3/16" embossed aluminum tread bright material. Each cover shall be hinged across the front edge of the crosslay assemble and be strong enough to support a firefighter in full turn-out gear. Bumper stops shall be provided to keep the covers from opening too far. Each cover shall open past center to stay open when the hose in being packed. Hand cutouts shall be cut into each cover. **CROSSLAY NETTING** Each end of the crosslays shall be provided with a heavy-duty netting to prevent the hose and nozzles from becoming dislodged during travel. The netting shall be positively fastened along one side and bunji-button attached on the other to provide rapid access. (Color to be determined at the pre-construction meeting) **LOWER SIDE PANELS & SERVICE ACCESS** The driver side and passenger side pump module lower panels shall be brushed stainless steel panels. Each lower side panel shall be removable with standard hand tools to provide access for major pump and controls service. **DRIVER AND PASSENGER SIDE UPPER SERVICE DOORS** Large service doors shall be provided on the driver and passenger sides of the pump module. Each door shall be fabricated from brushed stainless steel. Each door shall be held closed with trigger style latches and hinge vertically for easy access to the pump and plumbing area for service. Gasketing shall be provided on each door to prevent vibration of the door on the module. **TOP MOUNT HINGING GAUGE PANEL** The top mount pump operator's gauge panel shall hinge across the bottom to provide service access to the back side of all gauges and components in this area. **GAUGE PANEL MATERIAL AND FINISH** The pump operators gauge panel shall be fabricated from brushed stainless steel. **COLOR CODED PANEL IDENTIFICATION** The discharge controls shall be color coded using the Innovative Controls color coded controls and trim bezels. Each discharge shall be assigned a specific color at the pre-construction meeting. **GAUGE TRIM BEZELS** Each discharge gauge shall be provided with color coded bezels and each gauge. Each gauge trim bezel shall be provided with a poly carbonate color code and tag designation inlay.		

	Yes	No

CHROME ADAPTERS WITH COLOR CODED PANEL GARNISH RING BEZELS
All panel and bulk-head terminating suctions or discharges shall terminate with the appropriate size chrome adapters with caps. Each panel or bulk-head terminating suction or discharge shall be trimmed with a color coded Innovative Controls chrome garnish ring bezel. Each garnish ring bezel shall be provided with a poly carbonate color code and tag designation inlay.

TOP MOUNT VALVE CONTROLS
Each discharge shall be manually operated with an Innovative Controls locking top mount control handle. Each handle shall be chrome-plated with a recessed area for poly carbonate color code and tag identification. Each control shall be locking allowing the operator to lock the control in any position. Each control shall be connected to the corresponding valve with a stainless steel control rod.

PANEL CONTROLS & GAUGES
The control panel shall provide the following controls and gauges:

- Pressure governor & engine monitoring system as specified below.
- Locking valve controls for all pump discharges as specified below
- Switches with open indicator lights for all specified electric or pneumatic valves
- One 2 ½" discharge pressure gauge for each discharge
- LED water level gauge
- Primer control
- Auxiliary engine cooler.
- Audible and visual warning system per N.F.P.A.
- OK to pump lights per N.F.P.A.
- Tank to pump switch
- Pump heater switch
- Foam system controls
- Pump manufacturer's data plate
- Apparatus manufacturer's pump performance plate

PUMP MODULE LIGHTING
The gauge panel shall be lit with a full width white LED strip light for night operation of the pump. The panel light shall activate automatically when the chassis parking brake is set.

Each side panel shall also be lit with white LED strip lighting to aid in connecting hoses at night. These lights shall also activate automatically when the chassis parking brake is set.

Two (2) 18" or longer LED strip light pump service lights shall be provided and located one inside each side pump service door. These lights shall also activate automatically when the chassis parking brake is set.

	Yes	No

AUXILIARY COOLER
A heat exchange cooling system shall be provided to cool the chassis engine with use of the water from the discharge side of the pump. Heat exchanger shall not allow the mixing of the pump water with the chassis coolant. The auxiliary cooler shall be plumbed into the master drain system. The auxiliary cooler shall be valved and operated from the pump operator's panel.

PRESSURE GOVERNOR, MONITORING, & MASTER PRESSURE DISPLAY
A ***Fire Research InControl TGA 400*** pressure governor and monitoring display kit shall be installed. The kit shall include a control panel, intake pressure sensor, discharge pressure sensor, buzzer, and cables. The control panel case shall be waterproof and have dimensions not to exceed 4 3/4" high by 9 3/4" wide by 2 3/4" deep. The panel shall have LEDs to indicate PSI mode, RPM mode, OK TO PUMP, and IDLE RPM.

The following continuous displays shall be provided:
Pump discharge; shown with four daylight bright LED digits more than 1/2" high
Pump Intake; shown with four daylight bright LED digits more than 1/2" high
PSI/RPM setting; shown on an LED bar graph display
Engine RPM; shown with four daylight bright LED digits more than 1/2" high, updated in 10 RPM increments
Oil pressure; shown on an LED bar graph display
Engine coolant temperature; shown on an LED bar graph display
Transmission Temperature: shown on an LED bar graph display
Battery voltage; shown on an LED bar graph display.

2-1/2" DISCHARGE GAUGES
All pressure gauges shall be 2 ½" diameter Innovative Control discharge gauges. Individual line gauges for each discharge shall be supplied and mounted above the discharge valve control handle.

AUDIBLE &VISUAL WARNING SYSTEM
The pump operator's panel shall be supplied with audible and visual warning devices required by the NFPA 1901 standard for automotive fire apparatus.

PANEL INFORMATION PLATES
The following pump information plates shall be provided at the pump panel: panel shall provide the following controls and gauges:

- Third party pump test panel
- Pump manufacturer's data plate
- Apparatus manufacturer's pump performance plate

	Yes	No

PANEL LAYOUT
The panel layout configuration shall be done to match the our existing engine. This layout will be discussed in detail at the pre-construction meeting.

WATEROUS 1,250 GPM PTO DRIVE PUMP
The pump shall be a PTO driven Waterous CXVPA single stage 1,250 GPM pump.

The pump shall be provided with a mechanical seal.

The entire pump shall be assembled and tested at the pump manufacturer's factory. The pump shall be driven by a drive line from the truck transmission.

It is each bidder's responsibility to insure that the engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

Pump Performance:

- 100% of rated capacity @150 PSI net pump press.
- 100% of rated capacity @ 165 PSI net pumps press.
- 70% of rated capacity @ 200 PSI net pump press.
- 50% of rated capacity @ 250 PSI net pump press.

POWER TAKE OFF (PTO)
A Chelsea or Muncie brand power take off "PTO" shall be supplied and installed on the chassis transmission to drive the PTO pump as specified. The PTO size and model must be specifically matched for the chassis transmission and the pump application. (NO EXCEPTIONS)

PTO SWITCH LOCATION (PUMP ENGAGE)
A PTO engagement switch shall be located inside the cab of the apparatus. A warning tag shall be supplied in the area of the switch to read "ONLY ENGAGE & DISENGAGE PTO WHEN THE CHASSIS IS AT IDLE".

PUMP SHIFT LIGHTS
Pump shift engagement shall be made by engaging the transmission mounted PTO. An indicator light shall be provided adjacent to the PTO pump shift inside the cab to indicate when the PTO is engaged.

A second green indicator light shall be provided on the governor control to indicate when the PTO is engaged and the pump is in gear.

PUMP AND ROLL
A switch or means shall be provided on the apparatus that will allow the pump operator to switch throttle input from the panel governor to the chassis foot throttle while the pump is in gear allowing the apparatus to pump and roll. A flashing amber light shall be provided on the dash indicating when the apparatus is in pump and roll mode.

	Yes	No

MASTER DRAIN
The pump and plumbing shall be equipped with a Class 1 or equal master pump 12 port drain to allow draining of the lower pump cavities, volute and selected water carrying lines and accessories. The drain shall have an all brass body with a stainless steel return spring.

PUMP COLOR
The pump shall be painted black. The valves and stainless steel plumbing shall remain unpainted. Any steel pump or plumbing mounts or supports shall also be finish painted black in color.

PUMP WARRANTY
A FIVE-(5) year warranty on the parts shall be provided for the pump.

DRIVER & PASSENGER SIDE SUCTION INLETS,
One (1) driver side and one (1) passenger side male NH suction inlet shall be provided. The suction plumbing shall terminate with a chrome 6” NPT female x 6” male NH adapter.

SIDE INLET VALVES, TASK FORCE TIPS
The driver and passenger side suction inlets shall be valved with remote power Task Force Tips Jumbo Ball Intake Valves (AX8NX-NX-RC) designed to mount to the fire pump suction intake exterior of the side panels.

Each valve shall be provided with a remote control located at the top mount operator’s panel to allow the pump operator full operation of the corresponding valve without having to leave the panel area.

Each valve shall be provided with a Task Force Tips adjustable pressure relief valve.

Each Task Force Tips ball inlet valve shall be operated by a 12 VDC electric motor. The valve shall be wired to the apparatus with a plug on the exterior side of the panel to allow for easy removal of the valve for service.

Each valve shall be provided with a valve mounted manual override hand wheel to permit immediate operation of the valve in the event of abnormal operating conditions.

SUCTION INLET CAPS AND SCREENS
Both suction inlets shall be provided with a removable anode screens and terminate with male NST threads with chrome long handled caps.

	Yes	No

DRIVER SIDE 2.5" SUCTION
One (1) 2.5" suction shall be supplied on the left side pump panel. The 2.5" suction inlet shall be provided with chrome NST female swivel with screen, chrome plug and chain. The 2.5" suction valve shall be located behind the left panel and shall be operated manually.

AIR-PRIMER WITH AUTO PRIME
A Trident Emergency Products, LLC Air Prime™ primer system WITH AUTO-PRIME shall be supplied and installed. The primer system shall be a three-barrel system using 10 CFM of air for operation. The primer must be corrosion resistant with no moving parts. The primer shall be controlled at the pump panel with a rocker switch for manual or automatic mode.

3" TANK TO PUMP PLUMBING
One (1) 3" tank to pump valve with a Class One electric over pneumatic actuator shall be plumbed into the suction manifold. This line shall be provided with a check valve to prevent water from back flowing into the water tank. The valve shall be switched at the operator's panel. A green light shall indicate when the valve is open.

INTAKE RELIEF VALVES
A Class One or equal stainless steel intake relief valve shall be installed on the pump suction manifold. Each relief valve shall be capable of being set to a pressure from 75 PSI. to 250 PSI. Each valve shall be preset to 125 PSI. The excess water shall be directed below the apparatus body away from the pump operator's panel.

PUMP DISCHARGE MANIFOLD, STAINLESS STEEL
A pump discharge manifold shall be manufactured to provide discharges around the apparatus at the specified locations. The manifold shall be fabricated with stainless steel plumbing and attached directly to the discharge port on the fire pump. The manifold design shall take into consideration the use of elbows and other fittings that may inhibit flow or increase friction loss.

	Yes	No

AKRON IN-LINE BALL VALVES
The apparatus shall be supplied with Akron 8800 series self locking inline discharge ball valves. The valves shall be a swing-out design for quick and easy servicing eliminating the need to remove the valve from the plumbing for service. The valve body shall be constructed of high quality brass and other corrosion resistant materials. The valve ball shall be constructed of 316 stainless steel. The valves seats shall be self-adjusting seats (NO O-RINGS) creating a quality seal capable of holding both pressure and vacuum. The valve handle stop assembly shall be provided that allows the handle to be quickly changed to 8 different positions by removing one bolt reducing service problems and cost. The valves shall be designed to operate at pressures to 250 PSI and meet the NFPA 1901 standards for valve performance.

VALVE WARRANTY
The valves shall be provided with a valve manufacturer 10 year warranty.

DISCHARGE BLEEDER DRAINS
The apparatus shall be equipped with ¼-turn Innovative Controls lift and turn style ball type bleeder drains plumbed to each discharge. Each bleeder drain shall be plumbed to the appropriate discharge between the valve and cap or pre-connected to allow draining of each line or to bleed off line-locked air or water pressure. Each bleeder drain valve shall have an all-brass body with reinforced Teflon seals. The handle shall be chrome-plated zinc with a recessed area color code and tag identification.

2” TANK FILL
One (1) 2” tank fill shall be plumbed from the discharge side of the pump into the tank with Class 1 hose or Victaulic® groove-lock fittings to accommodate flexing between the tank and pump. The tank fill line shall be valved with an Akron in line ball valve. Valve shall be controlled from the pump operator’s panel with a manual locking control. A defuser shall be located inside the tank.

	Yes	No

APPARATUS DISCHARGES

The apparatus shall be provided with discharges to delivery water from the discharge side of the fire pump to specified locations on the vehicle. All discharges shall plumbing in compliance with the NFPA 1901 guidelines for automotive fire apparatus. Each discharge shall be valved with an Akron in line ball valve ball valve. All 3" or larger discharge valves shall be provided with a slow close actuator to regulate the speed the valved can be operated as specified by the NFPA. All discharges unless specified otherwise shall be controlled at the operator's panel with a locking valve control.

The discharges shall be as follows:

Driver side:

- Two (2) 2.5" discharges terminating at the driver side pump panel with 2.5" male NST droop fittings with 2.5" caps with chains.

Passenger side:

- One (1) 2.5" discharge terminating at the passenger side pump panel a with 2.5" male NST droop fitting with 2.5" cap with chain.

- One (1) large diameter discharge (LDD) terminating at the passenger side pump panel with a 5" x 30° Storz fitting with 5" Storz cap with chain.

Crosslays: (FOAM)

- Two (2) 2" discharges terminating, one (1) in the front and one (1) in the center crosslay hosebed each with a 2" NPT to 1.5" MNST swivel.
- One (1) 2.5" discharge terminating in the rear crosslay hosebed with a 2.5" NPT to 2.5" MNST swivel.

Front Bumper: (FOAM)

- One (1) 2" discharge shall terminate in the driver side front bumper hose bin with a 2" NPT to 1.5" MNST swivel.

Monitor:

- One (1) deck monitor discharge shall be plumbed to exit the pump module deck over the pump. The plumbing shall terminate with a TFT Extend-A-Gun and truck mount flange. A Task Force Tips XFC-62 monitor package shall be included with the apparatus. The monitor package shall consist of the following:
    - XFT-NJ Monitor Top, 1250 GPM
    - MST-4NY 2.5" NH 4 Stack Tips
    - XF-B Crossfire Storage Bracket
    - M-R1250SNJ-2.5"NH Automatic Pressure Nozzle 150 to 1250 GPM
    - XFH-1ST Single 5" Storz ground base
    - XG18VL-XL 18" Extend-A-Gun (Truck Mounted)
    - XF-SS10 10" 2.5" Stream Straightener

	Yes	No

FOAM PRO 2001 FOAM SYSTEM
A Hypro Foam Pro 2001 foam system shall be provide and installed on the apparatus.

The foam system shall be capable of handling all Class A foam concentrates. The system shall be operated by a full-function panel mounted digital display.

The entire system must be installed per the foam proportioner manufacturer's installation and operating instruction manual.

FOAM SYSTEM DISCHARGES
The foam system shall be plumbed to the crosslay discharges and the front bumper discharge on the apparatus.

12-VOLT ELECTRICAL
All 12-volt electrical equipment installed by the apparatus manufacturer shall conform to the current NFPA standards and modern automotive practices. All wiring shall be high temperature crosslink type to handle 125% of the maximum load. Wiring shall be run in hi-temp loom or conduit and securely attached and protected against chafing. Grommets shall be used anywhere a wires or harnesses pass through a sheet metal panel or frame. Automatic reset circuit breakers shall be provided which conform to SAE Standards. Wiring shall be color, function and/ or number coded. Function and / or number codes shall be continuously imprinted on all wiring harness conductors at no more that (4") intervals. Exterior wire connectors shall be heat shrink or environmentally sealed to withstand the elements including temperature extremes. Any electrical component that is installed in an exposed area shall be mounted in a manner that will not allow moisture to accumulate in it. Corrosion preventative compound or coating shall be applied to all terminals and plugs located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion.

FLOOR MOUNTED BATTERY SWITCH
A battery disconnect switch shall be wired to the chassis electrical system. The switch shall be located next to the driver's seat just inside the driver's door. This switch shall be an on/off two position switch.

IGNITION LIGHT
A green ignition light shall be provided in a location visible to the driver to indicate that battery switch is on and there is power to the ignition.

	Yes	No

110-VOLT SHORE LINE POWER
A Pro Charging Systems Dual-Pro 2 x 15, 12-volt, 30 amp battery conditioner with dual bar graph display shall be supplied and installed to charge the chassis batteries from a 120-volt shore line power source. The battery conditioner shall be a waterproof (submersible) system. The conditioner shall not have any mounting restrictions for temperature or direction of installation. It shall be fully automatic and solid state technology.

A three (3) year warranty shall be provided on the Pro Charging Systems conditioner.

KUSSMAUL A.C. AUTO PUMP
A Kussmaul model 091-9B-1 air brake leakage compensator compressor shall be supplied and installed to operate from the 110 volt side of the chassis shore line. The compressor shall operate from 120 volts AC power and draw 4.2 amps. The motor shall be a 1/8 horse power motor. The compressor shall provide .76 CFM open flow at 100 PSI max. The compressor shall be set to cut in at 75 PSI and cut out at 95 PSI. The compressor shall be provided with a one (1) year warranty.

SHORELINE 110-VOLT RECEPTACLE (auto-eject)
A 20 amp 120V Kussmaul super auto eject inlet receptacle (091-55-20-120) with Kussmaul cover (091-55YW) shall be installed and located on the driver side of the apparatus. Final location to be determined at the apparatus pre-construction meeting.

SHORELINE PLUG
The apparatus shall be delivered with a 20-amp cord end plug to match the shoreline receptacle.

15-AMP / 120-VOLT "STANDARD" DUPLEX RECEPTACLES (SHORELINE POWERED ONLY)
The apparatus shall be provided with NEMA 5-15R, 120 volt – 15 amp. standard duplex outlet receptacles that are powered from the apparatus shoreline system when the apparatus is plugged into shore power. Each receptacle shall be provided with spring loaded heavy-duty weatherproof cover. The outlets shall be located as follows:

- One (1) outlet shall be located in the driver side front compartment.
- One (1) outlet shall be located in the passenger side front compartment.

NOTE: Final locations to be discussed at the apparatus pre-construction meeting.

	Yes	No

DOOR OPEN & EQUIPMENT EXTENDED WARNING SYSTEM
A red flashing LED is to be provided and installed in the apparatus cab visible to the driver to indicate an open apparatus compartment door or equipment which may be extended. This warning light shall be properly identified with an engraved tag.

ELECTRONIC REVERSE ALARM
An NFPA approved electronic reverse alarm shall be provided and installed.

D.O.T. MARKER & CLEARANCE LIGHTING, L.E.D.
The apparatus body shall be supplied with Whelen OS series LED clearance and marker lighting as required by the Federal Motor Vehicle Safety Standard, Department of Transportation Standard and any local or state requirements. These lights shall be mounted with polished stainless steel guards and mounting gaskets.

LED TAIL LIGHTS
Two (2) Whelen 600 Series LED combination red stop-tail-turn lights shall be installed on the rear of the apparatus.

LED BACK-UP LIGHTS
Two (2) Whelen 600 Series LED clear back-up lights shall be installed on the rear of the apparatus below the tail lights.

TRI-CLUSTER LIGHT HOUSING
The rear tail lights and lower level zone “C” warning lights shall all be installed in a chrome Whelen tri-cluster light housing. The lights shall be stacked as follows:

- Top = Whelen 600 series LED warning light
- Center = Whelen 600 series LED stop/tail/turn light
- Bottom= Whelen 600 series LED back-up light

LICENSE PLATE MOUNT WITH LED LIGHT
The rear bulk-head shall be drilled and tapped for license plate mounting. A clear LED license plate light shall be installed above the license plate mounting points. The apparatus shall be delivered with stainless steel fasteners for license plate mounting.

COMPARTMENT LIGHTS, LED
ROM brand LED strip compartment lighting shall be installed each vertical door jamb of each apparatus body compartment. Each strip light shall cover no less than 70% of the vertical door jamb it is located in. An automatic door jamb switch shall be provided to activate the compartment lighting when the corresponding compartment door is opened.

	Yes	No

CHASSIS ENGINE SERVICE LIGHT
One (1) clear service light shall be provided under the hood of the apparatus to light the engine area. This light shall be provided with a switch in the lens.

LED CAB STEP & REAR TAILBOARD UNDERBODY SCENE LIGHTING
Ground lighting shall be provided under the apparatus to illuminate the immediate area around the apparatus. The lighting shall be done with Whelen 2G 4" (20C0CDCR) LED rubber grommet mounted lights with sealed polycarbonate bodies. Each light shall be installed in aluminum bracket to direct the lighting from under the apparatus to the walking area around the vehicle. The lights shall be located as follows:

- One (1) under the center of the chassis front bumper
- One (1) under each cab door entry step
- One (1) under each pump module running board
- One (1) under each end of the tail board

Total number of ground lights to be provided and installed is (7). The ground lights shall be switched on automatically when the chassis is placed in park.

REAR BULK HEAD STEP LIGHTS
Two (2) Whelen OS series white led rear lights shall be provided and installed on the lower rear bulk head to light the area above tail board of the apparatus. These lights shall be activated when the parking brake is set.

12-VOLT LED BROW LIGHT
A Fire Research 12-Volt Evolution LED model FCA830-V15 roof mount brow light shall be installed centered over the windshield on the cab. The lower mounting bracket shall allow the bottom of the lamp-head to pivot and the upper mounting bracket shall extend back on a turnbuckle that is adjustable to set the lamp-head angle. Wiring shall extend from a weatherproof strain relief at the rear of the lamp-head.

The lamp-head shall have eight (8) ultra-bright white LEDs. It shall operate at 12-volts DC, draw 6.5 amps, and generate 15,000 lumens. The lamp-head shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamphead and mounting arm shall be powder coated white.

The brow light shall be switched at the switch panel inside the apparatus cab.

	Yes	No

SURFACE MOUNT LED SCENE LIGHTING

Fire Research Spectra LED Scene Light model SPA900-Q70 surface mount lights shall be provided and installed on the apparatus as specified below. Each lamp head shall operate from the apparatus 12-volt electrical system.

Fire Research LED lighting locations and switching:

- One (1) LED light assemble shall be located high on each side of the pump module.
- One (1) LED light assemble shall be located on each rear corner of the body.
    - These side scene lights specified above shall be switched from the cab switch panel. Individual switches shall be provided for left side and right side scene lighting.

TELESCOPING LED SCENE LIGHTS

The apparatus shall be provided with Fire Research Spectra 20,000 lm LED telescoping scene lighting; model SPASB500-Q20. The lighting poles shall be side mount push up telescopic poles.

The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall rotate 360 degrees. Wiring shall extend from the pole bottom with a 4' retractile cord.

Each telescoping light shall operate from the apparatus 12-volt electrical system.

Telescoping lights shall be located and switched as follows:

- Two (2) lights shall be provided, one (1) at each rear corner of the cab. Each light shall be switched at the light head with the FRC "ON" switch option.
- Two (2) lights shall be provided, one (1) at each rear corner of the body. Both lights shall be switched with one switch in the apparatus cab labeled "REAR SCENE".
- Each pole shall be provided with the "SW" option wired into the chassis door and equipment ajar system to warn the driver if a pole is extended when the parking brake is released.

	Yes	No

NFPA EMERGENCY LIGHT PROGRAMMING

All emergency lighting shall be provided, installed and wired to comply with the 2009 (NFPA) 1901 Standard for Automotive Fire Apparatus. The lighting shall meet the requirements in all areas including “calling for the right-of-way” or “blocking the right-of-way” conditions. The switch from “calling for the right-of-way” to “blocking the right-of-way” shall happen automatically when the apparatus park brake is set.

LIGHT BAR

The upper level emergency zones “A”, “B”, and “D” shall be covered with a cab roof mounted light bar. The light bar shall be permanently mounted on cab roof and switched in the chassis cab. The lightbar shall be switched from the chassis cab switch panel. The light bar shall be as follows:

- Whelen Model: Justice , 56” light bar with eight (8) LED flashers total, two (2) forward facing red LED modules, two (2) forward facing white LED modules, two (2) front corner facing red LED modules, and two rear corner facing red LED modules.

- The lens colors shall be clear. The white LED’s shall shut down in the “blocking right-of-way” mode.

REAR BEACONS, LED

Two (2) L360 Series Super-LED® red rear beacons shall be provided and mounted on light stanchions at the upper rear corners of the tank, one (1) each side. These lights shall meet the upper level optical warning and optical power requirements of the NFPA for upper zones “B”, “C”, and “D”. The rear beacons shall be switched from the chassis cab switch panel. Dome colors shall be red.

GRILL LIGHTS

Two (2) Whelen LINZ6™ (LINZ6R) Red LED’s shall be provided in the grill area of the apparatus. These lights shall meet the lower level optical warning and optical power requirements of the NFPA for lower zone “A”. The lenses shall be clear with red LED’s. The lights shall be switched from the chassis cab switch panel. These lights shall be installed with chrome flange kits (LINZ6FC).

	Yes	No

INTERSECTION AND MID BODY WARNING LIGHTS

Six (6) Whelen LINZ6™ (LINZ6R) Red LED's shall be provided. These lights shall meet the lower level optical warning and optical power requirements of the NFPA for lower zones "B & D". The lenses shall be clear with red LED's. The lights shall be switched from the chassis cab switch panel. These lights shall be installed with chrome flange kits (LINZ6FC) and located as follows:

- Two (2) lights, one on each side of the apparatus ahead of the front axle.
- Two (2) lights, one on each side of the apparatus pump module.
- Two (2) lights, one on each side rear corner of the body.

REAR LOWER BODY WARNING LIGHTS

Two (2) Whelen 600 series model 60R02FRR flashing linear super LED's shall be provided. These lights shall meet the lower level optical warning and optical power requirements of the NFPA. The lenses shall be red with red linear super LED's. The lights shall be controlled by a switch on the cab instrument panel labeled lower level emergency lights. These lights shall be installed with chrome flanges and located as follows:

- Two (2) lights, one (1) in each rear corner of the body located over the tail lights.

WHELEN 295SL SIREN

A Whelen 295SLSC1 series siren with *REMOVABLE* microphone shall be furnished and installed in an accessible location to both the driver and passenger. The siren shall be a full function siren with a capable output of 200 watts.

WHELEN SIREN SPEAKER

One (1) Whelen model SA315P 100-watt siren speaker shall be installed behind one of the OEM bumper openings. No cutting of the chassis bumper shall be done for speaker mounting.

	Yes	No

CAB SWITCH PANEL

All emergency and scene lighting shall be switched in the apparatus cab with an Innovative Controls switch panel assembly. This switch panel assembly shall contain Carling Tech Contura II switches, LED back lite legends and bezel. The emergency light switching shall include a master warning light switch and upper and lower zone switches to allow pre-selection of emergency lighting zones. The light switches shall be "rocker" type with an internal indicator light to show when switch is energized. Switching shall be as follows:

Switches shall be provided as follows:

1) –MASTER EMERGENCY
2) –UPPER LEVEL EMERGENCY
3) –LOWER LEVEL EMERGENCY
4) –BROW LIGHT
5) –LEFT SCENE
6) –RIGHT SCENE
7) –REAR SCENE (TELE)
8) –BLANK

The master switch shall be provided to activate the preset emergency light switches. The scene lighting switches must not be wired through the master emergency light switch. The master switch shall be located closest to the driver.

BACK-UP CAMERA SYSTEM

The apparatus shall be provided with a camera and audio system to allow the driver to see and hear behind the apparatus when backing up the vehicle or to see behind the vehicle when required. The camera system shall be an Optimo Electronics Extreme Duty Camera System. The system shall include a 3 channel waterproof 7” LED color monitor with integrated audio to allow the driver to also hear what is in the area of the camera eye. The rear camera eye shall be an extreme duty night vision heated color camera with built in microphone. The monitor shall automatically power up with this camera when the apparatus is placed in reverse.

DVR RECORDING SYSTEM

A mobile digital video recorder (OP DRX2004) 4 channel DVR shall be provided and installed with the above back-up camera system. This will be used to record video captured from our thermal imager camera.

	Yes	No

DISSIMILAR METALS
Care shall be taken to avoid contact of dissimilar metals in the construction of the apparatus however; it is inevitable that these metals will come in contact is some areas around the apparatus. These areas shall be treated with "ECK" to help prevent dielectric corrosion.

BODY & TANK PAINTING
The apparatus shall be finish painted with DuPont Chroma System Paint. The compartment doors, if painted, shall be painted separately to ensure proper paint coverage on the body edges. The apparatus shall be prepared and painted using the following procedures:

- All surfaces to be painted shall be prepared and cleaned using soap and water. Prep-Sol 3919S or Kwik-Clean 3949S shall be used to remove any tar, wax, polish and grease.
- All surfaces to be painted shall be scuffed using 80 - 150 grit sandpaper. All surfaces shall receive a final wipe using Lacquer and Enamel Cleaner 3939S followed up with Plastic Prep 2319S.
- Two medium wet coats of Adhesion Promoter for Plastics 2322S shall be applied to all surfaces to be painted.
- All surfaces to be painted shall be primed with URO Primer-Filler 1140S. The primer mixture shall contain four (4) parts primer, one (1) part Activator 1125S, one and a half (1.5) parts Convertor 1130S, and one-half (.5) parts Flex Additive 2350S.
- Two applications of primer shall be applied. The first application shall be four (4) coats and the second application shall be three (3) coats.
- A final application of sealer shall be applied using URO Primer-Filler 1140S. The sealer mixture shall contain four (4) parts primer, one (1) part Activator 1125S, two (2) parts Convertor 1130S and one-half (.5) Flex Additive 2350S
- The base coat shall be DuPont Chromabase. The paint shall be applied according to DuPont base coat application instructions. The base coat shall be ChromaBase mixed with 5% Flex Additive 2350S.
- The clear coat shall be DuPont ChromaClear. The clear coat shall be applied according to DuPont clear coat application instructions. The clear coat shall be ChromaClear Multi-Use 7500S and mixed with 5% Flex Additive 2350S.

APPARATUS COLOR
The apparatus will be **Dark Red "Maroon"** to match the lower color of the cab.

COMPARTMENT INTERIOR FINISH
The compartment interiors shall be painted with light grey finish Zolatone.

TOUCH-UP PAINT
Touch up paint shall be provided.

	Yes	No

NFPA STRIPING
The lettering and striping shall meet or exceed the reflectivity and installation requirements set by the current NFPA 1901 Standard for Automotive Fire Apparatus.

LETTERING
The lettering and shall be done to match the fire department's existing apparatus as close as possible taking into consideration body lines and other differences between apparatus.

All lettering shall be large engine turned vinyl gold with a black outline shadow. The lettering shall be as follows:

On the front of the hood: 3" lettering to read *ENGINE _ _* (Unit number to be discussed)

Each cab door: 3" lettering to read *GLADSTONE PUBLIC SAFETY DEPT.*

The rear bulk-head of the apparatus: 6" or 8" *ENGINE _ _*

CLEAR PROTECTIVE COATING
All lettering, numbering and gold stipe edges shall be treated with a clear coat acrylic to prevent premature lifting and pealing.

REFLECTIVE STRIPING
A 1" / 6" / 1" wide white reflective stripe with 1" revel between each strip shall be affixed to the perimeter of the vehicle. The 1" revel shall be left between each of the specified stripes to revel the body color or martial the striping is applied to.

BLACK PIN STRIPE
The top of the top 1" stipe and the bottom of the bottom 1" stripe shall be trimmed with a ¼" black pin stripe.

ENGINE TURNED VINYL GOLD STRIPE WITH BLACK PIN STRIPE OUTLINE
Each rear wheel opening shall be trimmed with a black outlined vinyl engine turned gold stripe.

A black outlined vinyl engine turned gold stripe shall be provided over each headlight on the apparatus cab.

	Yes	No
DOOR REFLECTIVE STRIPING A minimum of 96 square inches of retro-reflective material shall be provided and affixed to the interior of any cab or crew door on the apparatus designed for persons to enter or exit the apparatus as specified in the NFPA 1901 Standard for Automotive Fire Apparatus. **REAR CHEVRON** The upper rear bulk head of the tank shall be chevron striped with 3M™ diamond grade reflective material in an inverted “V” pattern. The pattern shall be (6”) red / lime yellow / red.		

	Yes	No
The following equipment shall be provided and delivered with the apparatus. Each bidder MUST include your equipment pricing in your total bid price of the apparatus however; a spread sheet shall be provided in your bid package that separates the equipment into an each price and extended price for each item to allow the department to add or omit items if necessary:		
1 One (1) set of Zico folding wheel chocks model SAC-44-E with under body mounting brackets model SQCH-44-H shall be provided and installed under the driver side front body compartment.		
2 One (1) Duo Safety series 900-A or equal NFPA compliant 24’-0” two section aluminum extension ladder shall be provided with the apparatus at delivery.		
3 One (1) Duo Safety series 775-A NFPA compliant 14’-0” single section aluminum roof ladder with folding hooks on one end shall be provided with the apparatus at delivery.		
4 One (1) Duo Safety series 585-A or equal NFPA compliant 10’-0” folding aluminum attic ladder shall be provided with the apparatus at delivery.		
5 Two (2) Kochek 6” x 13’-0” light weight clear suction hoses with MNST rocker lug fittings on one end and FNST swivel long handle fittings on the other shall be provided with the apparatus ad delivery.		
6 One (1) Kochek (FBS602) 6” float strainer		
7 One (1) 5” x 25’-0” rubber jacketed supply hose shall be provided and delivered with the apparatus. The hose shall be coupled with 4.5” FNST swivel x 5" Storz.		
8 Three (3) 1.5” Akron style 4821 Assault break-a-part nozzles with pistol grips and spinning teeth, 150 GPM @ 100 PSI shall be provided with the apparatus at delivery.		
9 One (1) 2.5” Akron style 4836 High Range Assault break-a-part nozzle with pistol grip and spinning teeth, 250 GPM @ 100 PSI shall be provided with the apparatus at delivery.		
10 One (1) Akron Axial Playpipe with Tips, style 2393 shall be provided with the apparatus at delivery.		

		Yes	No
11	Six (6) lengths of YELLOW 5” x 100’-0” (600’-0” total) Key Pro-Flo LDH or equal large diameter discharge hose with 5” Storz couplings shall be provided with the apparatus at delivery.		
12	Twelve (12) lengths of YELLOW 3” x 50’-0” (600’-0” total) Key Big-10 or equal discharge fire hose shall be provided with the apparatus at delivery.		
13	Four (4) lengths of YELLOW 1.75” x 50’-0” (200’-0” total) Key Big-10 or equal discharge fire hose shall be provided with the apparatus at delivery.		
14	Four (4) lengths of GREEN 1.75” x 50’-0” (200’-0” total) Key Big-10 or equal discharge fire hose shall be provided with the apparatus at delivery.		
15	Four (4) lengths of BLUE 1.75” x 50’-0” (200’-0” total) Key Big-10 or equal discharge fire hose shall be provided with the apparatus at delivery.		
16	One (1) 6 pound flat head axe with yellow fiberglass handle and mounting brackets installed.		
17	One (1) 6 pound pick head axe with yellow fiberglass handle and mounting brackets installed.		
18	One (1) 6’-0" D-handle pike pole with fiberglass handle and mounting brackets installed.		
19	One (1) 8’-0" straight handle pike pole with fiberglass handle.		
20	Two (2) orange thermoplastic body Streamlight brand Fire Vulcan rechargeable flashlights with LED tail lights, 12-volt charging bases and shoulder straps shall be provided and installed on the apparatus. Mounting locations to be determined before delivery.		
21	One (1) 20 lb dry chemical (ABC) extinguisher (Ansul) with mounting bracket shall be provided and installed on the apparatus at delivery. Mounting location to be determined before delivery.		
22	One (1) 2.5 gallon light water extinguisher with mounting bracket shall be provided and installed on the apparatus at delivery. Mounting location to be determined at the apparatus pre-paint meeting.		

		Yes	No
23	One (1) First Aid Kit shall be provided and mounted on the apparatus. Mounting locations to be determined at the apparatus pre-paint meeting.		
24	Two (2) Kochek (K45-3) standard spanner wrench sets including two (2) universal spanner wrenches (K01) and one (1) hydrant wrench (K05) with holder per set shall be provide and installed on the apparatus at delivery. Mounting locations to be determined at the apparatus pre-paint meeting.		
25	One (1) Kochek (KS34) Storz spanner wrench set including four (4) Storz x Spanner wrenches (KS3) with holders shall be provided and installed on the apparatus at delivery. Mounting locations to be determined at the apparatus pre-paint meeting.		
26	One (1) double female 2.5” NST adapter with mounting bracket shall be provided and installed on the apparatus. Mounting locations to be determined at the apparatus pre-paint meeting.		
27	One (1) double male 2.5” NST adapter with mounting bracket shall be provided and installed on the apparatus. Mounting locations to be determined at the apparatus pre-paint meeting.		
28	One (1) dead blow mallet suitable for use on suction hose connections shall be provided and installed on the apparatus. Mounting locations to be determined at the apparatus pre-paint meeting.		
29	Two (2) Husky brand 12’-0” x 14’-0” x 22oz. vinyl salvage covers (HTV-12 x 14)		
30	Two (2) ViewBrite 28" Lighted Collapsible Traffic Cone kits or equal shall be provided and delivered with the apparatus. Each kid shall contain four (4) 28" lighted collapsible traffic cones and a carry bag with handle.		
31	One (1) Cardiac Science Powerheart AED G3 Plus AED shall be provided with the apparatus.		
32	Eighteen (18) SCOTT AIR_PAK 75 4.5 SCBA units including backframe and harness assembly, standard E-Z Flo regulator with/ HUD, Pak-Alert Pass Device, 60 minute 4500 PSI Carbon Cylinder and AV-3000 HT facepiece - NFPA 2013 shall be provided with the apparatus. (Nine (9) will be stored on the apparatus)		

		Yes	No
33	Eighteen (18) Scott 60 minute 4500 PSI Carbon Cylinder SCBA bottle shall be provided with the apparatus. (Eleven (11) will be stored on the apparatus)		
34	Two (2) traffic vests compliant with the ANSI / ISEA 207 Standard for High Visibility Public Safety Vests		
35	One (1) Blow Hard BH-20 ventilation fan		
36	One (1) Scott Eagle Imager 320 thermal imaging camera with Scott Eagle Imager 160 TCS Truck Mount Charging System. The system shall include two (2) batteries. Your quote must include installation on the apparatus as instructed by the fire department.		
37	One (1) Hurst SP 310E2 eDRAULIC™ Spreader with two batteries and one charger		
38	One (1) Hurst S 700E2 eDRAULIC™ Cutter with two batteries and one charger		
39	One (1) Hurst R 411E eDRAULIC™ Ram with two batteries and one charger		
40	One (1) Hurst 12” Ram extension		
41	One (1) Hurst AC to DC converter for the Edraulic tools		
42	One (1) Warn Zeon 10 Multi-Mount Winch kit with winch, hawse fairlead, carrier, and winch tether control.		