Burns Township Fire Department
P.O. Box 397
Byron, MI 48418

Dear Bidder,

The Burns Twp Fire Department is inviting and encouraging you to bid on the attached pumper apparatus specification we have put together.

This apparatus has been designed to be fully compliant NFPA 1900 pumper however, it will respond as a first out tanker and back up pumper. The apparatus will carry 3,500 gallons of water and be equipped with a 1,500 GPM Waterous split shaft driven fire pump. It is required that this vehicle be manufactured to the latest version of the NFPA 1900 Standards for Automotive Fire Apparatus. In addition to the NFPA, the apparatus shall be compliant with all DOT, SAE, FMVSS, and the State of Michigan motor vehicle regulations.

The Burns Twp Fire Department shall not be held responsible for any errors or omissions concerning the NFPA in our bid specifications. It is each bidder's responsibility to ensure your bid is fully compliant to our request for bid and the latest version of the NFPA 1900 Standards for Automotive Fire Apparatus. The NFPA Standards shall take president in areas of conflict between our specification and the standard.

Each bidder agrees by submitting a proposal that your proposal may not be modified, withdrawn, or cancelled for 60 days after submission. Your bid price must be valid for a period of 60 calendar days following specified date of submission.

The Burns Twp Fire Department reserves the right to reject any or all bids or to waive any informality when it is deemed to be in the best interest of the Fire Department.

All bids must be received sealed at the address shown below by 4:00 PM EST on October 30, 2024**.** The bids will be opened that evening at 7:00 PM Eastern Standard Time. Any bids received after the deadline stated above will be returned to the bidder unopened. It is each bidder's responsibility to ensure that your bid is delivered to the address shown below on time. Neither Burns Township nor the Burns Twp Fire Department shall be held liable for late or non-delivery of bids.

If your company chooses not to bid we would like to request a **"no bid response"** letter or email to be returned if possible.

All bids must be returned to: Burns Township
10355 Bath Road
P.O. Box 397
Byron, MI 48418

Sealed bids must be clearly marked on the outside of the package with: "**FIRE TRUCK BID"**

If you have any questions regarding the bid package, please email them to Chief Prestonise at fire@burnstownship.org. (This email is to be used for bid questions only, not for advertising or email blasts)

Burns Township Fire Department

Sincerely,

Wade Prestonise
Fire Chief
Burns Twp. Fire Department

Pumper - Tanker Specification	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.

DESIGN AND WORKMANSHIP

The apparatus shall be of the latest design and type while using the most current industry construction techniques.

The apparatus, assemblies, component parts, etc., shall be designed and constructed with consideration given to the nature of service and loads the vehicle will be subjected to over the life of the vehicle.

The manufacturer shall meet the minimum requirements of:

- 2024 NFPA 1900 Standards for Automotive Fire Apparatus
- Third party testing by Underwriter's Laboratories, Inc.
- All State of Michigan and Federal Department of Transportation motor vehicle regulations in place at the time of bid award.

	Yes	No

APPARATUS WEIGHT

The apparatus shall comply with the requirements for weight and load distribution as required by the NFPA 1900 Standard for Automotive Fire Apparatus.

A computerized weight distribution calculation shall be provided with your proposal. The calculation shall include the chassis weight with all fluids and fuels topped off, estimated body weight, a 250-lb. allowance per seat belt for personnel and a 2,500-lb. distributed load allowance for equipment.

APPARATUS PERFORMANCE TESTS AND REQUIREMENTS

The apparatus must meet or exceed all testing requirements specified in the 2024 NFPA 1900 Standards for Automotive Fire Apparatus. Proof of testing as required shall be included with the apparatus at delivery.

DELIVERY

The apparatus shall be delivered under its own power to Burns Twp Fire Dept. (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.

INFORMATION REQUIRED AT DELIVERY

The apparatus shall be delivered with all documentation and testing documents required by the 2024 NFPA 1900 Standard for Automotive Fire Apparatus.

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 matter 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.

	Yes	No

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.

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.

WARRANTY

The following warranties are considered the minimum. *Please state if any of your warranties are prorated.*

Materials & Workmanship:	One (1) year from the date of delivery State your warranty:_____
Electrical:	Four (4) year from the date of delivery State your warranty:_____
Water Tank & Body:	Tank lifetime, body portion ten (10) years State your warranty:_____
Structural-Subframe:	Fifteen (15) years from the date of delivery State your warranty:_____
Paint:	Seven (7) year from the date of delivery State your warranty:_____

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 warranted by pump manufacturer. A copy of the pump manufacturer's warranty shall be provided with your bid.		
Apparatus Accessory Items:	All accessory items shall be covered by the individual manufacturer's specified warranty.		

Pumper - Tanker Specification	Yes	No

PRE-CONSTRUCTION MEETING

The successful bidder shall provide a pre-construction meeting prior to the start of manufacturing. All construction details and build specifications will be reviewed and finalized during this meeting. The meeting shall be held at the Burns Twp Fire Department. A member of the manufacturers design team along with the sales representative for the vehicle shall attend this meeting.

INSPECTION TRIPS

One (1) inspection trip for two (2) truck committee members shall be included in your bid price for final inspection of the apparatus before it leaves the manufacturers facility. The trips shall include all reasonable expenses for transportation, lodging and meals paid for by the successful bidder. If the manufacturer is located outside of Michigan's lower peninsula, airfare shall be provided for the transportation from ***Capital Region International Airport, Lansing, Michigan or Bishop International Airport, Flint Michigan.***

Rooms must be calculated as single occupancy basses (two members, two rooms).

Inspections will take place at times arranged on a mutual basis between the purchaser and the successful bidder.

VEHICLE DATA RECORDER (VDR)

The apparatus shall be provided with an on-board Vehicle Data Recorder (VDR) as required by the NFPA 1900 Standard for Automotive Fire Apparatus. The VDR shall include a seat belt warning module and display.

MAXIMUM VEHICLE SPEED

The apparatus shall comply with the maximum speed requirements as required by the NFPA 1900 Standard for Automotive Fire Apparatus.

NFPA REQUIRED EQUIPMENT

The equipment listed in these specifications is the only equipment requested 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 specified as required in the NFPA 1900 Standard for Automotive Fire Apparatus that is not listed in this bid specification will be provided and installed by the *Fire Department* after the apparatus is delivered.

Yes	No

OVERALL LENGHT
The apparatus overall length shall not exceed 420 inches (35 feet).

OVERALL HEIGHT
The apparatus overall height shall not exceed 126 inches (10 feet, 6 inches).

OVERALL WIDTH
The apparatus overall width shall not exceed 100 inches (8 feet, 4 inches)

NOTE: This dimension shall include the primary construction of the apparatus body. Any peripheral items such as but not limited to Rub Rails, Fenderettes, Mirrors, Lights, Handrails, etc. shall not be incorporated into this measurement.

FREIGHTLINER 114SD CHASSIS
The Fire Department's preference of commercial chassis remains open to all brands; however, it is encouraged bidders provide proposals using a Freightliner chassis per our provided chassis specifications for fleet standardization. The chassis must also include any equipment required by the NFPA 1900 Standard for Automotive Fire Apparatus.

CHASSIS INSPECTION
When the chassis is received, it shall be thoroughly inspected and received to the chassis specifications as provided in the chassis specifications section of this proposal package. 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.

Yes	No

DIESEL PARTICULATE FILTER
The chassis exhaust diesel particulate filter (DPF) location shall be specified by the successful bidder and located by the chassis manufacturer. The DPF must not be relocated 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.

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.

RADIO INSTALLATION
One (1) department supplied dual head radio shall be installed in the apparatus as directed by the Fire Chief before delivery.

RADIO COAX
A new antenna coax shall be provided by the apparatus manufacturer for the radio installation. Care shall be taken to run each coax away from other power feeds or other wires that may cause radio interference.

MAG MIC CLIPS
Each radio or radio head specified for installation shall include the installation of a Jotto Desk or Innovative Products Magnetic Mic clip.

Yes	No

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 and shall be black LineX finished. The top shall hinge forward to provide access to the inside electrical components for service. The console height and width shall be such that it will allow for easy use of the chassis seat belts while offering easy access to console components while driving or riding in the cab. The following items shall be mounted in the center console:

- Apparatus switch panel
- Siren control
- Traffic advisor controller
- Mini water level gauge
- Pump engage level
- Door-a-jar light
- Ignition light
- Dump switches
- RAM mount for a 10” iPad

NOTE: The console layout to be reviewed in detail at the pre-construction meeting.

CONSOLE MAP POCKETS

The rear portion of the console shall be provided with a 3.5” wide single map pocket for clip board and map book storage.

TANK & BODY

The tank shall be designed to incorporate the hosebed, body sides, rear fenders, and compartments. The capacity of the water tank shall be ***3,500 U.S. gallons***. The tank portion of the body shall be a wet side "T" type design.

FOAM CELL

The tank shall include a 20 gallon internal foam cell. The foam cell shall be located in the forward portion of the tank.

TANK & BODY CONSTRUCTION

The tank and body shall be constructed of 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 current NFPA Standards for Automotive Fire Apparatus.

Yes	No

SWASH PARTITIONS “BAFFLES”
The tank shall be baffled in full compliance with the current NFPA Standards for Automotive Fire Apparatus.

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

WATER TANK FILL TOWER
The water tank fill tower shall be located in the driver side front corner of the hosebed. 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 the fire pump.

The vent / overflow pipe shall vent from the fill-tower and dump under the center of the apparatus behind the rear axle. If the overflow dumps on the rear axle, a hose or deflector shall be provide to direct the water away from any axle vents,

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 MOUNTING
The tank shall be installed in a fabricated cradle assembly constructed of heavy wall structural aluminum. Sufficient cross members and tank protection shall be provided to properly support and protect the bottom of tank as specified by the tank manufacturer. The tank shall be mounted to the cradle and the cradle mounted to the chassis frame. A “breaker strip” of (UHMW) ultra-high molecular weight polyethylene shall also be provided between the chassis frame and the aluminum tank cradle. The mounting system must be approved by the tank manufacturer, no exceptions.

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.

Yes	No

SUB FRAME & FASTENERS

The entire body sub frame shall be fabricated from structural aluminum shapes with aluminum gusseting as required. ECK® Corrosion Prevention Coating 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 premature deterioration of the frame.

ALUMINUM DIAMOND PLATE OVERLAYS AND TRIM

The following areas of the body shall be overlaid with 3003-H22 bright finish aluminum diamond plate material. Any overlay areas that will be utilized as a stepping surface shall be overlaid with embossed 3003-H22 bright finish aluminum diamond plate that meets or exceeds the NFPA friction coefficient requirements for a stepping surface.

- The front face of the pump module
- The rear face of the pump module
- The front face of the body
- The rear lower face of the body

REAR TAILBOARD

The aluminum rear sub structure assembly shall support a 12” 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 polypropylene sheet stock. Each rear wheel well shall be supplied with a radius formed polypropylene fender liner.

	Yes	No

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 for department supplied SCBA bottles. 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 of the rear wheels, behind the side dump: 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) AD2002 dual bottle compartment shall be provided.

Passenger side; forward of the rear wheels, behind the side dump: 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 (10) SCBA bottles in the rear fenders of the apparatus body.

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 heavy duty rear tow eye assembly shall be installed at the rear of the apparatus. The tow eye shall mount directly to a fabricated cross member assembly that is attached directly to both chassis frame rails. The assembly shall be LineX coated after fabrication and before installation.

GENERAL COMPARTMENTATION

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

	Yes	No

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
- (L1) Driver side in front of the rear wheels: 80” high x 60” wide x 26” lower / 14” upper
- (L2 / L3) Driver side high side compartment: 40” high x 126” wide x 14” deep (This is to be a two door compartment located directly over the chassis rear wheels with a fixed internal divider between the two compartment doors)
- (L4) Driver side rear of the rear wheels: 80” high x 47” wide x 26” deep **FULL HEIGHT**

COMPARTMENT SIZES, PASSENGER SIDE
- (L1) Passenger side in front of the rear wheels: 32” high x 60” wide x 26” deep
- (L2) Passenger side rear of the rear wheels: 32” high x 47” wide x 26” deep

CABINET VENTS
All compartments shall be vented with a 4” diameter louvered and screened vent.

R.O.M. COMPARTMENT DOORS, NATURAL FINISH
Each main body compartment shall be supplied with a brushed finish R.O.M. brand roll-up compartment door. All doors shall be front roll design doors

Each door latch system to be a full width one piece D-shaped extruded aluminum lift bar for easy one hand operation.

DOOR ROLLER DRIP PANS
Each ROM roll-up door shall be provided with a door roll drip pan / guard to protect the door and catch debris off the door roll when it is in the open position.

TOP DOOR DRIP RAIL EXTRUSIONS WITH DOOR SEALS
Each door shall be installed with R.O.M. anodized extruded aluminum drip rails and vertical door sills.

COMPARTMENT LIGHT AND DOOR-AJAR SWITCHING

A magnetic cabinet light / door ajar switching system must be integrated in the lift bar handle to signal open door.		

	Yes	No

INTERLOCKING PLASTIC DRAIN TILES
All compartment floors shall be supplied with BLACK interlocking plastic drain tiles.

SCBA STORAGE
Each SCBA shall be securely held in place with a Flame Fighter brand or equal SCBA bracket. Each bracket shall include two (2) coated spring steel bottle clamps to securely store the packs. Three (3) brackets shall be evenly spaced in the driver side front high side compartment.

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. Each shelf shall be fabricated with about a 2” lip on all four sides. Shelving locations shall be as follows: (L1) Driver side front compartment: Two (2) shelves

- (L3) Driver side over wheel compartment: One (1) shelf
- (L1) Passenger side front compartment: One (1) shelf
- (L2) Passenger side rear compartment: One (1) shelf

INTERLOCKING PLASTIC DRAIN TILES
All compartment shelves shall be supplied with BLACK interlocking plastic drain tiles.

FIXED WALL MOUNTED TOOL BOARD
One 3/16” D.A. finished tool board shall be fabricated and installed on the upper back wall of the driver side front compartment to allow the department to easily wall mount fittings and tools.

300 POUND, 100% EXTENSION ROLL OUT TRAY
The apparatus shall be equipped with 300 pound, 100% extension roll out trays. Each tray shall be constructed from .187” D.A. finished smooth aluminum with a 3” lip on all four sides.

Each tray shall be provided with an Austin Hardware or equal ball bearing "heavy duty" slide assembly on each side of the tray. The slide assemblies shall incorporate cadmium plated ball bearing roller slides and a lock-in, lock-out (FDR) Front Drawer Release system.

Trays shall be located as follows:

 One (1) 300 pound, 100% extension roll-out tray shall be mounted to the floor area of the (L1) driver 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.

Burns Township Fire Department

Pumper - Tanker Specification	Yes	No

INTERLOCKING PLASTIC DRAIN TILES

All roll out trays shall be supplied with BLACK interlocking plastic drain tiles.

VERTICAL TOOL BOARDS

The apparatus shall be equipped with 100% extension vertical tool board(s).

Each tool board shall be constructed with D.A finished .187 aluminum. The tool board shall be bent on the front and rear vertical edges to provide strength and a grip .

Each tool board shall be installed with an Austin Hardware or equal ball bearing "heavy duty" slide assembly located at the top and bottom of each board. The lower assembly shall be provided with a lock mechanism to lock the tool board in both the stored and extended positions. The upper and lower roll-out tracks shall be attached to an adjustable track system that will allow the department to adjust the tool board spacing.

Vertical tool boards shall be located as follows:

- Two (2) 100% extension tool boards shall be provided and located in the (L4) driver side rear full height / full depth compartment.

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.

Each ladder rung shall include a short LED strip light installed in the bottom side of the rung to provide step lighting for each rung and rear area lighting around the ladder and tail board. These lights shall come on when the chassis park-brake is set.

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. Handrails shall be provided and located as follows:

- Two (2) short horizontal access rails, one (1) on each side of pump module to aid in accessing the crosslays.
- Two (2) 40” horizontal access rails, one (1) located vertically on each front corner of the body for use with the folding steps.

	Yes	No

FIXED & FOLDING STEPS

All steps shall be Innovative Controls 3004234 series steps. Each step shall include both an integrated step light and down light. 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. Steps shall be provided and located as follows:

- Four (4) folding steps up the driver side front bulk head for use in accessing the top of the pump module.
- Four (4) folding steps up the officer side front bulk head for use in accessing the top of the pump module.

A total of eight (8) folding steps shall be provided and installed

REAR 4” FILL VALVE

A 4” fill FFE (Firemen’s Friend Engineering) or equal stainless steel check-valve fill assembly with screen shall be placed at an accessible level right of the rear suction inlet. 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 adapter shall terminate with a 5” Storz with 5” Storz to 2.5” FNST swivel reducer adapter with plug and chain.

REAR NEWTON DUMP, STAINLESS STEEL

One (1) manual actuated stainless steel 10" x 10" Newton dump valve 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.

SIDE ELECTRIC NEWTON DUMPS, STAINLESS STEEL

Two (2) stainless steel 10" x 10" Newton dump valves, electrically actuated shall be installed inside the right and left fender area ahead of the rear wheels. The dumps shall be inside the fender area of the truck. Each rear body panel shall be provided with a cut-out in it to allow the dump chute to extend and dump beyond the side of the apparatus. Each cut-out shall be provided with a trim flange that extended back into the body 6”. The flange assembly shall be painted to match the apparatus.

18” ELECTRIC CHUTES, STAINLESS STEEL

Two (2) 18” Newton stainless steel electric actuated extension chutes shall be provided and installed on the side Newton dump valves.

POWER DUMP & CHUTE SWTICH WIRING

Each power dump shall be wired with a single switch to sequentially actuate the dump and chute.

	Yes	No

EXTERIOR DUMP AND CHUTE SWITCHES

Exterior switches shall be located on the driver side front and rear corners of the apparatus body for the driver side dump and on the officer side front and rear corners of the apparatus body for the officer side dump. Each switch shall be installed in a small Cast Products cast aluminum compartment with a door. Each switch shall be marked with a tag to designate the switch function and direction of operation. A small light shall be provided to light the switches for night operation. These lights shall be wired to be on anytime the chassis lights are on.

INTERIOR CAB DUMP AND CHUTE CONTROL SWITCHES

The interior cab dump switches shall be specifically designed for this application. These switches shall be three position switches with a green light to indicate when the dump is fully CLOSED and the chute is fully retracted and the unit is "OK" to drive. An amber light shall be provided in each switch to indicate when the dump is fully OPEN and the chute is fully extended. Each switch shall be designated with an engraved tag to note switch function and direction of operation. Switches shall be guarded to prevent accidental actuation.

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 operator’s 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 hosebed shall be full width, no outer catwalks. The hosebed shall be sized and designed to carry the hose loads specified below. The hosebed dividers and cover shall stop 15” short of the rear of the apparatus to provide step area at the top of the ladder. The poly floor area of the hosebed shall have grooving cut into the poly material to form and integrated hosebed decking allowing the packed hose to drain and allow airflow under the hose for hose ventilation. Grooving MUST be cut by the poly tank manufacture, no exceptions. The exterior walls of the hosebed shall be painted with the apparatus body. 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:

- 500’-0” feet of 3” fire hose coupled in 50’-0” lengths
- 1500’-0” of 5” LDH coupled in 100’-0” length

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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 divider shall be provided

HOSEBED RETENTION

The main hosebed shall be provided with a hinging aluminum diamond plate wind guard that covers the front 24” of the hosebed. When the cover is closed it shall lay flat across the top of the hosebed over the front of the packed hose to prevent wind from getting under the leading edge of the packed hose during travel. The guard shall hinge across the front of the hosebed to allow firefighters to hinge it up and out of the way when packing hose. Stay-cables or bumpers shall be provided.

The rear of the hosebed shall be provided with a vinyl hosebed net to prevent the packed hose from becoming dislodged from the apparatus during travel. The net shall cover the back of the hosebed and extended onto the tops of the hosebed risers approximately 12”. The net shall be designed such that the packed hose can be deployed by flipping the back flap portion of the net onto the top section of the net. The net shall be attached to the top of the hosebed with a stainless-steel bar and hook system. Velcro shall be provided on the top of each side hosebed riser from the rod hook to the back of the hosebed to hold the net tight over the hosebed. The rear of the net 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 net shall be RED in color.

HOSEBED SUCTION HOSE STORAGE

An aluminum storage box shall be provided in the main hosebed area along the driver side of the body to store a second length of 6” x 10’-0” suction hose.

Yes	No

REAR BODY STORAGE TUNNEL FOR LADDERS, SUCTION HOSE, AND TOOLS

A storage tunnel shall be designed into the outboard officer side of the tank. The stored equipment shall load and unload off the rear of the apparatus. The storage tunnel shall be provided with dividers to separate the stored items allowing each item to be unloaded and loaded without disrupting the other equipment. The equipment shall be accessed from the rear of the apparatus through a vertically hinged aluminum door, chevroned to match the pattern on the back of the apparatus. The door shall be supplied with a positive type D-ring or trigger style latches.

The equipment to be stored shall be as follows:

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

SIDE MOUNT PUMP MODULE

The pump operator's module shall be a side mount operator's design. This design shall position the pump operator on the driver side of the apparatus. The panel shall allow the operator to access all pump controls and gauges in this area while standing on the ground without the need to use steps or the side running boards.

PUMP MODULE

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

PUMP MODULE & BODY FLEX RELIEF

The fire pump module and apparatus body shall be designed to be two independent structures allowing for flex of the apparatus without creating excessive stress in this area.

PUMP MODULE FINISH

The exposed pump module aluminum framing shall be painted red to match the apparatus.

SIDE PUMP MODULE RUNNING BOARDS

Each side of pump module shall be equipped with running boards to aid is accessing the upper crosslays on the apparatus. Each running board shall meet or exceed the NFPA requirements for a stepping surface. 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.

Yes	No

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 HEATER

The pump compartment shall be provided with a RedDOT R-3540 hot water heater plumbed into the chassis engine coolant system that provides a minimum of 22,000 BTU’s of heat. The heater shall be provided with a fan that produces 194 CFM. This fan shall direct heat at the back of the panel to prevent the gauges from freezing. The fan shall draw no more than 1.8 amps at 13.6 volts DC. A switch for operation shall be provided at the operator’s panel. A green light shall be provided to indicate when the heater is 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 fabricated such to allow the packed hose to drain and allow air flow for ventilation.

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

Note: The crosslay swivels shall be located to the outside edges of the crosslay bays to allow easy hose attachment. Swivels shall be located as follows, front crosslay, officer side, center crosslay, driver side, rear crosslay, officer side.

CROSSLAY COVER

A single hinging aluminum diamond plate crosslay cover shall be provided over the crosslays. The cover shall be fabricated from 3/16” embossed aluminum tread bright material. The cover shall be hinged across the front edge of the crosslay assemble and be capable of supporting a firefighter in full turn-out gear when in the closed position. Bumper stops shall be provided to keep the cover from opening too far and damaging the cab. The cover shall open past center allowing it to stay open without the need for mechanical hold-open devices. Hand cutouts shall be cut into each end of the cover.

Yes	No

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 edge of the cover and bunji & hook attached on the bottom edge to provide rapid access.

LOWER SIDE PANELS & SERVICE ACCESS
The driver side and officer side pump module lower panels shall be aluminum panels. The panels shall be coated with black LineX after all holes are cut and drilled. Each lower side panel shall be removable with standard hand tools to provide access for major pump and controls service.

GAUGE PANEL MATERIAL & ACCESS
The operator's upper gauge panel shall be an aluminum panel. The panel shall be coated with black LineX after all holes are cut and drilled. This panel shall be hinged for service to the gauges and controls in this area.

OFFICER SIDE UPPER PANEL MATERIAL & ACCESS PANEL
The officer side upper service panel shall be an aluminum panel. The panel shall be coated with black LineX after all holes are cut and drilled. The panel shall be hinged for plumbing service access.

ADDITIONAL UPPER SIDE ACCESS PANELS
The area of the pump module behind the crosslays shall include additional upper service panels. The panels shall be aluminum panel, coated with black LineX after all holes are cut and drilled. The panel shall be hinged for service access.

COLOR CODED PANEL IDENTIFICATION
The discharge controls, bleeders, and gauges 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 an Innovative Controls color coded bezels for each gauge. Each gauge trim bezel shall be provided with a poly carbonate color code and tag designation inlay.

PUMP MODULE LIGHTING
Each side pump panel shall be provided with LED weather proof strip lighting to light the panel for night operation. The panel lights shall be switched at the pump operator's panel.

PUMP SERVICE LIGHTS
Two (2) LED pump service lights shall be provided and located one (1) inside each side pump service door. The pump service lights shall be provided with switches at the individual lights.

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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.

SIDE MOUNT VALVE CONTROLS

The apparatus shall be equipped with Innovative Controls locking push-pull controls for manual valve actuation. The handles shall be chrome plated with a recessed area for identification tags and color coding inlays. The controls shall be a ¼ turn for locking the control in any position.

Each control shall be connected to the valve with a stainless steel control rod.

2.5" DISCHARGE GAUGES

Individual Innovative Controls 2.5" line pressure gauges shall be provided for each 2" or larger discharge. Each gauge shall be mounted adjacent to its corresponding discharge valve control handle. Each gauge shall be liquid filled with pulse and vibration dampening liquid to lubricate the internal mechanisms and prevent lens condensation.

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.

AUDIBLE &VISUAL WARNING SYSTEM

The pump operator's panel shall be supplied with audible and visual warning devices required by the NFPA 1900 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

1500 GPM SPLIT SHAFT DRIVEN PUMP

The pump shall be a Waterous CX Series1500 GPM split shaft fire pump. The pump shall perform and meet the following tests to receive a Third Party Certification.

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

The pump shaft shall have mechanical shaft seals, NO PACKING. The mechanical seal shall be spring loaded, maintenance-free and self-adjusting.

PUMP GEARBOX

The pump gearbox shall transfer power from the chassis main driveline to the fire pump. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

PUMP SHIFT

The pump gearbox shall be equipped with a pneumatic pump shift. The pump shift lever shall be located in the apparatus cab. The lever shall be provided with a locking collar that locks the lever in road or pump gear.

The pump shift shall be provided three (3) green warning lights to indicate to the operator(s) when the pump has completed the shift from road to pump. The warning lights shall be located as follows:

 Two (2) in the truck driving compartment located with the pump engage switch. One (1) on the pump operator's panel adjacent to the throttle control.

All lights shall have appropriate identification and instruction plates.

MASTER DRAIN

The pump shall be equipped with master pump drain to allow draining of the lower pump cavities, volute and selected water carrying lines and accessories.

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.

DRIVER SIDE SUCTION INLETS,

One (1) driver side male NH suction inlet shall be provided. The suction plumbing shall terminate with a chrome 6" NPT female x 6" male NH adapter.

	Yes	No

INLET VALVE
One (1) Task Force Tips (AB8NX-NX) Jumbo BIV Short 6” NHM Rigid x 6” NHF swivel short handle intake valve shall be provided on the driver side inlet of the apparatus. The valve shall be a 6” female NST swivel x 6” male NST.

2.5” DRIVER SIDE SUCTION
One (1) 2.5” gated suction inlet with bleeder installed on the left side of the apparatus. The intake shall be valved with a 2.5” Akron Brass 8000 series valve with stainless steel ball. The valve shall be controlled with a swing type direct lever actuator at the valve. The inlet shall termite with a 2.5” NST swivel female straight adapter with screen and 2.5” chrome plug with chain.

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 Innovative Controls locking push-pull controls 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.

INTAKE RELIEF VALVES
A Task Force Tips intake relief valve shall be installed on the pump suction manifold. The relief valve shall be capable of being set to a pressure from 75 PSI. to 250 PSI. The valve shall be preset to 125 PSI. The excess water shall be directed below the apparatus body away from the pump operator’s panel.

INLET BLEEDER
All valved inlets shall be equipped with a ¼-turn Class One ¾” ball type bleeder with Jstyle handle plumbed to the supply side of the valve to allow bleeding off excess water or air pressure.

PUMP DISCHARGE PLUMBING, STAINLESS STEEL All discharge pluming beyond the pump discharge manifold shall be fabricated with stainless steel plumbing. The plumbing shall attach directly to the discharge ports on the fire pump.

	Yes	No

AKRON IN-LINE BALL VALVES

The apparatus shall be supplied with Akron swing out design discharge ball valves. Each valve ball shall be constructed of 316 stainless steel. The valve seats shall be self-adjusting seats able to seat without the use of O-rings creating a quality seal capable of holding both pressure and vacuum. Each valve shall be designed to operate at pressures to 250 PSI and meet the NFPA 1900 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 Class One ¾" ball type bleeders with Jstyle handles. 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.

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 push-pull locking control. A defuser shall be located inside the tank.

APPARATUS DISCHARGES

The apparatus shall be provided with discharges to delivery water from the discharge side of the fire pump to below specified locations on the vehicle.

Driver side:

- Two (2) 2.5" discharges terminating at the driver side pump panel with chrome 2.5" male NST droop fittings with 2.5" chrome caps with cables. Each discharge shall be valved with an Akron 8825 ball valve. Each valve shall be actuated at the pump operator's panel with an Innovative Controls side mount push/pull handle.

Passenger side:

- One (1) 2.5" discharge terminating at the passenger side pump panel a with chrome 2.5" male NST droop fitting with 2.5" chrome cap with cable. The discharge shall be valved with an Akron 8825 ball valve. The valve shall be actuated at the pump operator's panel with an Innovative Controls side mount push/pull handle.

- One (1) large diameter discharge (LDD) terminating at the passenger side pump panel with a 5" x 30° Storz fitting with 5" Storz to 2.5" NHM rigid with 2.5" cap with cable. The discharge shall be valved with an Akron 8830 slow-close ball valve. The valve shall be actuated at the pump operator's panel with an Innovative Controls side mount push/pull handle.

Yes	No

Crosslays:

- Two (2) 2” discharges terminating, one (1) in the front crosslay hosebed and one in the center crosslay hosebed each with a 2” NPT to 1.5” MNST swivel. Each discharge shall be valved with an Akron 8820 ball valve. Each valve shall be actuated at the pump operator’s panel with an Innovative Controls side mount push/pull handle.

- One (1) 2.5” discharges terminating, in the rear crosslay hosebed with a 2.5” NPT to 2.5” MNST swivel. The discharge shall be valved with an Akron 8825 ball valve. The valve shall be actuated at the pump operator’s panel with an Innovative Controls side mount push/pull handle.

Rear discharge:

- One (1) 2.5” discharge terminating at the rear of the apparatus with a chrome 2.5” male NST droop fitting with 2.5” chrome cap with cable. The discharge shall be valved with an Akron 8825 ball valve. The valve shall be actuated at the pump operator’s panel with an Innovative Controls side mount push/pull handle.

Monitor:

- One (1) 3” deck monitor discharge shall be plumbed to exit the pump module, over the pump and behind the crosslays. The plumbing shall terminate with a TFT remote controlled 18” Extend-A-Gun. The discharge shall be valved with an Akron 8630 electrically actuated ball valve. The valve shall be actuated at the pump operator’s panel with an Akron Navigator Pro 9335-0006 (controller to have pressure reading only).

- The monitor package shall consist of the following:
    - XGA38VL-RL: RC 3” waterway Extend-A-Gun RC3, 18”
    - XGB-23: 3” Plate & Saddle Bracket
    - YN-EL5A: Flex RC Monitor Top
    - M-ERP1250SNJ: -RC Master Stream 150 to 1250 GPM @ 100 PSI
    - FC-RF-24: Wireless Operators Station
    - YC-RF-RAD-24: Wireless Operators Station Antenna Kit

Booster Reel:

- One (1) Hannay booster reel (EF 24-23-24 RT) shall be provided in the tailboard, recessed into the rear bulkhead area of the apparatus, below the rear dump. The booster reel shall be enclosed in an aluminum diamond plate compartment. The compartment shall be provided with an aluminum tread bright door that flips down to provide access to the hose and reel. A set of hose rollers shall be provided just inside the door to aid in hose deployment and rewinding. The hose reel shall be supplied with 100’-0” of 1” light weight booster hose. The reel shall be plumbed with 2" stainless steel plumbing and Class One high pressure hose with stainless steel coupling. The reel discharge shall be valved with an Akron 8820 ball valve. The

valve shall be actuated at the pump operator’s panel with an Innovative Controls side mount push/pull handle.

Yes	No

PUMP BLOW-OUT
An air blow-out system shall be provided to blow the pump, plumbing and reel out with air provided by the chassis air system. A check valve shall be provided in this line to prevent water from being introduced back into the chassis air system. The blow-out control valve shall be located at the pump operator's panel.

FOAM SYSTEM
A Waterous Aquis 3.0 foam system shall be provided and installed on the apparatus.

The foam system shall be capable of handling all Class A & B 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 all crosslay discharges, booster reel, and the rear 2.5" discharge.

FOAM CELL
A 20 gallon foam cell shall be provided in the main water tank as specified in the tank section of this specification.

FIRE RESEARCH TANK VISION FOAM LEVEL DISPLAY A Fire Research Tank Vision foam level monitoring system shall be provided and installed on the apparatus. The LED display shall be located at the pump operator's panel.

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.

Yes	No

FLOOR MOUNTED BATTERY SWITCH

A battery disconnect switch shall be provided in 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.

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.

CHARGER AND COMPRESSOR LOCATION

The Pro Charging Systems battery conditioner and Kussmaul compressor shall be located inside the pump module.

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.

The shoreline inlet shall be located forward on the driver side of the pump module.

SHORELINE PLUG

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

	Yes	No

20-AMP / 120-VOLT "STANDARD" DUPLEX RECEPTACLES (SHORELINE POWERED ONLY)
The apparatus shall be provided with NEMA 5-20R, 120 volt – 20 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 (L1).
- One (1) outlet shall be located in the officer side front compartment (R1). □

One (1) outlet shall be located in the officer side rear compartment (R2).

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

DOOR OPEN & EQUIPMENT EXTENDED WARNING SYSTEM
A red flashing light 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 TecNiq S17 Series LED clearance and marker lighting (red and amber) 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 S17-0GC0-1 chrome flange kits with gaskets. Lights shall be located as follows:

- One (1) Amber high on each outermost front corner of the body
- One (1) Amber low and forward of the rear axles (this single light shall be a running light and turn signal indicator)
- One (1) Red high on each upper outermost rear corner of the body
- Three (3) Red centered low on the rear of the body, spaced approximately 12" apart.

LOWER REAR BODY REAR CORNER MARKER LIGHTS
A pair of Britax brand LED marker lights (L427.200) shall be provided one (1) on each rear lower corner of the apparatus body. The lights shall be LED, amber forward, red rearward.

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FOUR LIGHT CHROME FLANGE KIT

The below tail, turn, back up, and lower emergency lights lights shall be installed in a Whelen 600 Series four position chrome housing (PLAST4V). The lights shall be positioned from top to bottom in the housing as follows:

- Position 1: Lower level zone “C” emergency light
- Position 2: Stop-tail-turn
- Position 3: Amber arrow turn Position 4: Backup

LED TAILLIGHTS

Two (2) Whelen 600 Series (604BTT) LED combination red stop-tail-turn lights shall be installed on the rear of the apparatus in the Whelen chrome quad cluster flange kit as specified later in these specifications.

LED TURN LIGHTS

Two (2) Whelen 600 Series (604T) LED amber turn signal lights shall be installed on the rear of the apparatus in the Whelen chrome quad cluster flange kit as specified later in these specifications.

LED BACK-UP LIGHTS

Two (2) Whelen 600 Series (604BU) LED clear back-up lights shall be installed on the rear of the apparatus in the Whelen chrome quad cluster flange kit as specified later in these specifications.

LICENSE PLATE MOUNT WITH LED LIGHT

The rear bulk-head shall include a polished cast aluminum license plate mounting with clear LED light.

COMPARTMENT LIGHTS, LED

LED stripe compartment lighting shall be installed in the apparatus body compartments on each vertical door opening (2 stipe lights per opening). Each light strip shall cover at least 75% of the door opening height.

An automatic door jamb switch shall be provided to activate the compartment lighting when the corresponding compartment door is opened.

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.

Yes	No

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 TecNiq 4" (T44-WD0B-1)) 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 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 six (6). The ground lights shall be switched on automatically when the chassis is placed in park.

REAR BULK HEAD STEP LIGHTS

Two (2) TecNiq D30 LED lights shall be provided and installed on the lower rear bulkhead to light the area above tail board of the apparatus. These lights shall be activated when the parking brake is set.

HOSEBED, CROSSLAY, AND DUNNAGE AREA LIGHTING

Six (6) TecNiq D30 LED lights shall be provided and installed, two (2) on the forward bulkhead of the body located to light the crosslay / deck monitor area of the pump module, two (2) shall be located in the dunnage to light the fill tower and dunnage area, and two (2) on the forward wall of the main hosebed to light the hosebed area. These lights shall be activated when the parking brake is set.

SIDE SCENE LIGHTING, SURFACE MOUNT LED

Fire Research Spectra LED Scene Light model SPA260-Q20, 20,000 lumen 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:

- Two (2) LED light assemblies shall be located on the driver side of the body in the header area over the roll-up doors.
- Two (2) LED light assemblies shall be located on the passenger side of the body in the header area over the roll-up doors.

All the above lights shall be switched from the cab and from the pump operator's panel with left side and right side scene light switching.

Yes	No

SIDE SCENE LIGHTING, CAB MOUNT LED

Fire Research Evolution II LED Scene Light model FCA850-V20, 20,000 lumen flat 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:

- Two (2) LED light assemblies shall be located, one (1) on each side of the cab over each door. The lights shall be installed toward the rear in order to not interfere with the side lighting on the lightbar.

The cab side scene lights shall be switched from the cab and from the pump operator's panel with the side scene light switches.

REAR SCENE LIGHTING, SURFACE MOUNT LED

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 assemblies shall be located on each rear corner of the body.

The rear scene lights shall be switched from the cab and at the pump operator's panel.

REAR SCENE LIGHTS WITH REVERSE

The rear scene lights on the apparatus shall come on automatically when the apparatus is placed in reverse.

NFPA EMERGENCY LIGHT PROGRAMMING

All emergency lighting shall be provided, installed and wired to comply with the 2016 (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-ofway" conditions. The switch from "calling for the right-of-way" to "blocking the right-ofway" shall happen automatically when the apparatus park brake is set.

Yes	No

UPPER ZONES "A", "B", & "D"

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 light bar shall be as follows:

- Whelen Edge Freedom, 60" light bar with eight (8) LED flashers total, four (4) corner flashers, two (2) forward flashing outer flashers and two (2) forward flashing inner flashers ***and a single PFP2 Pioneer series plus brow light integrated into the center of the light bar***.

- The lens colors shall be clear with red and clear flashing LED modules. The clear LED's shall automatically shut down in the "blocking right-of-way" mode when the parking brake is engaged.

UPPER ZONES "B", "C" & "D"

Six (6) Whelen 600 series model 60R02FCR flashing linear super LED's shall be provided and installed. These lights shall meet the upper level optical warning and optical power requirements of the NFPA for upper zones "B, C & 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 and located as follows:

- Two (2) lights shall be provided, one (1) high in each upper corner on the driver side of the body
- Two (2) lights on the back of the body, one (1) in each upper rear corner.
- Two (2) lights shall be provided, one (1) high in each upper corner on the officer side of the body

GRILL LIGHTS

Four (4) Whelen 600 series model 60R02FCR flashing linear super LED's 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.

INTERSECTION AND MID BODY WARNING LIGHTS

Eight (8) Whelen ION-T™ (TLIR) 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 (TIONNFC) and located as follows:

- Two (2) lights, one (1) on each side of the apparatus ahead of the front axle.
- Two (2) lights, one (1) on each side of the apparatus pump module.
- Two (2) lights, one (1) each side of the body centered between the rear axles. Two (2) lights, one (1) on each side rear corner of the body.

Yes	No

REAR LOWER BODY WARNING LIGHTS

Two (2) Whelen 600 series model 60R02FCR 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 clear 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 REAR LED TRAFFIC ADVISOR (Amber)

A Whelen Traffic Advisor™, 5MM LED eight lamp low profile (TAL85) 46.82" directional amber traffic warning system shall be supplied at the rear of the apparatus. The traffic advisor shall be located high on the rear bulk-head of the tank. A wire conduit shall be built into the tank to conceal the wiring. The traffic advisor shall be provided with a Whelen (TACTRL1A) control head located in the apparatus cab accessible to the drive and passenger.

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

Two (2) Whelen model SA315P 100-watt siren speakers shall be installed behind one of the OEM bumper openings or grill area. It is preferred to have no cutting of the chassis bumper.

Yes	No

CAB SWITCH PANEL

All emergency and scene lighting shall be switched in the apparatus cab with an Innovative Controls (3002591-02-XX) 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) –CLEAR LIGHT CUT OFF
3) –BROW LIGHT
4) –LEFT SCENE
5) –REAR SCENE
6) –RIGHT SCENE
7) –BLANK
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.

USB CHARGING OUTLET(S) – BATTERY DIRECT POWER

The apparatus shall include Blue Sea or equal dual universal serial bus (USB) charging receptacle(s). The USB ports shall be capable of a 5 Volt-2.1 amp total output. Each receptacle shall be wired battery direct. The charging outlets shall be located as follows:

- One (1) shall be located in the chassis console.

Yes	No

PUMP OPERATORS PANEL SWTICH PANEL

A second Innovative Controls (3002592-02-XX) switch panel assembly shall be provided at the pump operators panel to switch specified components from this location. This switch panel assembly shall contain weather proof Carling switches, LED back lite legends and bezel. The switches shall be "rocker" type with an internal indicator light to show when the switch is energized. Switching shall be as follows:

Switches shall be provided as follows:

1) –PANEL HEAT (Red indicator light)
2) –BROW LIGHT (Green indicator light)
3) –DRIVER SCENE (Green indicator light)
4) –OFFICER SCENE (Green indicator light)
5) –REAR SCENE (Green indicator light)
6) –AIR HORN (Red momentary rocker switch)

CAMERA SYSTEM (NO DVR / NON-RECORDING)

A four (4) camera, non-recording camera system shall be provided and installed on the apparatus to allow the driver and pump operator's positions a better view on the blind sides of the apparatus. The camera system shall be as follows:

In Cab:

One (1) OP 704ED 7" LED color monitor shall be provided and installed. The monitor shall be wired into all cameras on the apparatus.

At Panel:

One (1) OP1004CD 10" LED color monitor shall be provided and installed. The monitor shall be wired into all cameras on the apparatus. The monitor shall be located high in the pump operator's panel compartment on the driver side of the apparatus to allow the pump operator to see to the front, rear, and officer sides of the apparatus on one screen. The operator shall have the ability to select between each camera on the apparatus allowing for full screen viewing of independent cameras when needed.

Cameras:

Four (4) OP 31 IR Blind Spot Camera(s) shall be provided and installed, one (1) on the driver side of the body, one (1) on the officer side of the body, one (1) in the cab facing forward, and one (1) recess mounted high on the back of the body. Each camera shall provide a ultra wide 150º viewing angle.

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.

	Yes	No

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 **RED**. The paint code will be provided to the successful bidder.

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.

A total of 40 (3") letters and numbers shall be provided and installed on the apparatus cab door and hood to designate department name and unit number. The lettering shall be reflective gold with a black outline shadow.

A total of 30 (8") letters and numbers shall be provided and installed high on the apparatus body to designate the apparatus type an unit number. The lettering shall be reflective gold with a black outline shadow.

A total of 16 (3") letters shall be provided and installed on the rear apparatus body to designate the department name. The lettering shall be reflective gold with a black outline shadow.

A total of 3 (10") numbers shall be provided and installed on the rear apparatus body to designate the unit number. The lettering shall be reflective gold with a black outline shadow.

A total of 3 (6") numbers shall be provided and installed on the front bumper to designate the unit number. The lettering shall be reflective gold with a black outline shadow.

Each rear body side compartment door shall include a "Provided by the People We Protect" graphic to match our newest apparatus. The lettering shall be reflective gold with a black outline shadow.

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" white reflective stripe with 1" paint reveal between each stripe shall be affixed to the perimeter of the vehicle. The stripe shall include a "hocky stick" upsweep at the front of the body. The striping shall conform to the NFPA reflectivity and installation requirements.

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.

FRONT BUMPER CHEVRON

The OEM Freightliner chassis front bumper shall be striped with a 1”-6”-1” white reflective stripe with 1” bumper reveal between each stripe.

EQUIPMENT

The following equipment shall be provided and delivered with the apparatus.

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.

2. Two (2) Kochek 6” x 14’-0” light weight clear suction hose with MNST rocker lug fittings on one end and FNST swivel long handle fittings on the other.

3. One (1) Kochek 6” low level strainer with jet siphon

4. 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 as directed by the fire department.

5. One (1) Kochek (KS34) Storz spanner wrench set including four (4) Storz x Spanner wrenches (KS3) with holders shall be provided and installed as directed by the fire department.

6. One (1) Duo Safety series 900-A or equal NFPA compliant 24’-0” two section aluminum extension ladder.

7. One (1) Duo Safety series 775-A or equal NFPA compliant 14’-0” single section aluminum roof ladder with folding hooks on one end.

8. One (1) Duo Safety series 585-A or equal NFPA compliant 10’-0” folding aluminum attic ladder.

9. One (1) 1” x 100’-0” light weight booster hose installed on the reel.