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RESTRICTIONS

Maximum Overall Length 28' (336").

CHASSIS

The tank and fire body shall be mounted on an International HV607 SBA chassis as specified in the chassis specifications included in this bid package.

WATER TANK CAPACITY

The tank shall have a capacity of 2,000 U.S. gallons.

TANK CONSTRUCTION AND MOUNTING

The water tank shall be custom built to meet the needs of the fire department. A T"-style tank fabricated from non-corrosive, stress-relieved virgin copolymer polypropylene thermoplastic material. All exterior tank joints and seams are extrusion welded. All welds conform to DVS and AWS standards. All joints, seams, and welds tested for integrity and leaks and are certified to be free from defects. The tank is to be fitted with removable lifting eyes designed with a 3-to-1 safety factor to facilitate easy removal for service and or repair.

To improve the safety of the vehicle by reducing undesired water movement while traveling, the tank will be constructed with a containment baffling system that meets current NFPA 1901 recommendations. The containment type baffling system shall include primary transverse partitions and end walls that shall extend down to the bottom of the support sills. Additional partitions shall be placed in an efficient design to minimize water motion and turbulence while traveling. Holes shall be cut to allow both air and water to pass through the baffles to facilitate dumping of the water (no exceptions).

A fill tower shall be provided. It shall be positioned to the front of the tank and have an open area of no less than 480 square inches and shall be 5" above the top of the shell. An internal overflow and venting system consisting of a 6" diameter polypropylene copolymer pipe shall be provided and fitted into the fill tower. The combination vent/overflow is permanently open to the atmosphere allowing automatic free entry and escape of air while filling or dumping. The overflow shall discharge behind the rear axle per N.F.P.A #1901. The automatic venting feature of this assembly means that the water load can be dumped quickly without any mechanical or manual operation of the vent.

A sump shall be provided on the underside of the tank with a 3" NPTF clean out port and a NPTF tank to pump suction connection. An anti-swirl plate will be provided internally to exclude cavitation during rapid suction. Note: if mid-ship pump then the tank to pump suction connection will be located at the front head of the tank.

A discharge sump shall be provided at the rear of the tank and positioned below the bottom of the shell to allow complete evacuation during dumping.

REAR DUMP SYSTEM

One (1) dump valve stainless steel 10" electric actuated Newton quick dump with an 18" Electrically operated telescopic Auto Chute shall be provided at the rear center of the water tank. It shall be sumped below the bottom edge of the tank assembly to provide 100% of water usage and enhance the flow of the water. Three controls for the center dump valve shall be located at the rear of the apparatus one (1) on each side and (1) in the cab console. The mounting and location of these controls shall be designed to prevent accidental activation.

SIDE DUMP SYSTEM

TWO (2) 18" ELECTRIC OPERATED TELESCOPIC AUTO CHUTE 5018

(2) two electrically operated stainless steel gate-style dump valves with chutes provided and be located one (1) each side of the apparatus to the rear of the axle. Three controls for the dump valves shall be located on the apparatus one (1) on each side and rear (1) for each valve in the cab console. The mounting and location of these controls shall be designed to prevent accidental activation.

FIREMAN'S FRIEND REAR DIRECT TANK FILL(S)

There shall be two (2) 4" tank fill(s) at the rear of the apparatus. The tank fill shall have a semi-automatic fill valve manufactured by Fireman's Friend Engineering, Inc. The valve shall be an internally mounted check type fill valve of highly corrosive resistant stainless steel. The end of the valve(s) shall be on a down sweep and have a chrome plated 5" storz with cap and chain.

APPARATUS BODY AND CONSTRUCTION

The entire body is designed to be independent of the chassis frame and water tank so it can be removed at some later date if required. A body sub-framework will be built and tied down to the chassis frame. The body sections will be fastened to the sub-frame forming a single integrated unit that is engineered to withstand the demands of the Fire Service.

Provide fully removable, bolt-in fender liners, which extend into the truck frame and have vertical splash shields inward of the wheels. The completely washable fender liners are designed to protect the front and rear compartments and main body supports from road salts, dirt accumulation and corrosion.

The rear wheel wells shall be trimmed with bolt-in, replaceable type, rubber, fenderettes.

*****Adequate room shall be provided in the rear wheel wells for the application of single wheel St. Pierre roller tire chains during winter operations.***

FENDERETTES

Rubber fenderettes are to be installed on the wheel wells to prevent splash and enhance appearance. The fenderettes extend approximately 1" beyond the body side and are designed to be replaced. All fasteners will not be exposed to the exterior of the fenderettes or body

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HOSE BED

A full width and length hose bed shall be provided over the water tank. The hose bed shall be constructed in such a manner that will prevent damage to fire hose. The hose bed shall comply with the current NFPA requirements. The interior of the hose bed shall be free of projections such as nuts, sharp edges or brackets that may damage hose. The hose bed and walls shall be manufactured from aluminum. No exceptions to this requirement are allowed.

An extrusion shall be installed over the rear opening of the hose bed to protect the body from wear.

The hose bed shall be designed to accommodate the following hose load:

HOSE BED CAPACITY

The hose bed shall be divided into three (3) hose compartments and shall have the capacity to hold the minimum quantities of hose.

Quantity	Size of Hose	Brand Name of Hose	
500'	5"	Key Eco 10	flat load
400'	3"	Key Eco 10	double stack
400'	1.75"	Key Eco 10	double stack

HOSE BED FLOORING

Provide the hose bed flooring with, properly spaced for ventilation and removable for access to the water tank. The flooring shall be smooth and free from sharp edges to avoid hose damage. A removable panel shall be provided in the floor to allow access to the water tank level gauge-sending unit, without removing the entire hose bed floor.

HOSE BED PARTITIONS

Provide Three (3) fully adjustable hose bed partitions. Partitions shall be removable for access to the booster tank.

*****The top and rear edge of each of the adjustable hose bed partitions shall be provided with an integral tubing reinforcement welded on for additional support to prevent bowing and movement from hose load shifts.***

HOSE BED COVER

A Black hose bed cover constructed of 16 oz. Heavy-duty crisscrossed reinforced nylon shall be provided. Cover shall be fire retardant vinyl and installed over hose bed. The cover shall have shock cord fasteners installed around the perimeter of the hose bed. The end of the hose bed cover shall be weighted and cover the hose bed opening. Sewn in reflective identifier letters / numbers, color yellow shall be provided on the back of the hose bed cover. **TANKER 1-28**

REAR PLATFORM

A 16" rear platform will be furnished and will be integral to the body construction. It will be equipped with aluminum open grip grating. Mirror finish stainless trim protectors will be provided on the rearmost edge of each beavertail support.

COMPARTMENTATION

Two (2) body compartments will be installed, one (1) curb side of the in front of the rear wheels. The approximate inside dimensions will be 72" wide by 32" tall by 25" deep. One (1) street side of the body in front of the rear wheels. The approximate inside dimensions will be 36" wide by 32" tall by 25" deep and contain the pump controls and operator's panel. The compartments will be "sweep out" design. Each compartment shall be properly vented.

Two (2) compartments will be installed, over the rear wheels street side of the body, Approximate inside dimensions are 60" wide by 34" tall by 14" deep These compartments will be equipped with Pac-Trac tool board mounting. Each board will cover the back wall of each compartment. Mounting shall be provided for (2) Kocheck 6" Holley transfer tubes, (2) Kocheck LL60 Low level strainers with jet siphons, (2) Kocheck 6" power siphon JS60 on the Pac board.

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COMPARTMENT LIGHTS

Provide each compartment with Two (2), Amdor Integral full height LED lights. Lights shall be activated when the respective door is opened and the master battery switch is on.

SIX INCH HARD SUCTION AND STORAGE

Three (3) ten foot lengths of six inch light weight suction shall be provided. (1) Length shall be carried on the Zico drop tank bracket. Storage for securing the other (2) lengths of hard suction shall be provided either street side catwalk, or secured in the hose bed compartment.

ROLL-UP COMPARTMENT DOORS

The side compartments shall be equipped with Amdor brand roll up door. The doors shall be of anodized aluminum and painted body color and form a close fitting curtain, manufactured of close tolerance slat profiles. The doors will have a pretension operator in a sealed alloy drum. The operator is positioned at the forward part of the compartment to afford maximum clearances and head room. The door shall be provided with side seals as a standard feature. These will be a specially formulated extruded neoprene, shaped to readily shed water. The side seals are mounted in a special extrusion, forward of the curtain track. The latching mechanism will be a lift bar arrangement, which utilizes a door wide spring loaded bar and two (2) cam surfaced latch points. The door shall include an additional slat on bottom to allow for adequate lift bar clearance.

MOUNTED EQUIPMENT

The following equipment shall be mounted to the apparatus body by the manufacturer. Locations TBD at pre-construction meeting.

Two (2) Kocheck #KS34, set of (4) LDH storz wrenches with holder.

One (1) Kocheck #K45-3, hydrant wrench and spanners with holder.

Three (3) Kocheck #K46-2, (2) K01 spanners with holder.

COMPARTMENT DECKING

Black "Turtle Tile" decking shall be installed in each compartment and in the hose trays.

COMPARTMENT DECKING EDGE

The "Turtle Tile" decking shall have a 2" deep black tapered edge between the compartment door and the front edge of the decking. This will allow equipment to be easily removed and put back without catching the edge.

BODY COSMETICS (RUB RAIL)

Provide sacrificial rub rails made of poly hard plastic with reflective stripe material. The rail to be mounted at the base of the body, extend outward a minimum 3/4", downward 2", and flange inward 1". The rub rails shall extend the full length of the main body and wrap around the rear body corners. Rub rails will be designed to bolt to the body from the bottom side of the compartment area, so as not to damage the body side panels on initial impact and to provide for ease of replacement.

FOLDING STEPS

There shall be two (2) sets of large folding LED lighted steps with a minimum of 42 square inch surface conforming to NFPA requirements and made of high strength die cast aluminum, with a textured chrome plate finish for access to the hose bed area.

There shall be folding steps street side. LED lighted with a minimum of 42 square inch provided at the front on the street side, for access to the hose bed area.

There shall be folding steps curb side. LED lighted steps with a minimum of 42 square inch provided at the front on the curb side, for access to the hose bed area.

Lower Level Rear Steps large folding LED lighted steps with a minimum of 42 square inch provided at the rear for access to the hose bed area.

Folding Steps, Minimum of Two (2), One (1) Curb Side, One (1) Street Side and / or as needed to meet the NFPA standard.

SAFETY GRAB HANDLES

Hansen knurled aluminum handrails will be provided with red LED lights at each location where steps are provided to access to upper areas of the fire body. The lights will be activated when the headlight switch is activated and the parking brake is applied. The LED lights may be load managed.

PORTA-TANK RACK

A 3000 gallon QUIC-LIFT Portable Tank System Model #: PTS-32-9 shall be provided and installed above of the curbside compartments to carry an Aluminum frame 3000 gallon Fol-Da-Tank, FDTA-3000. A switch shall activate the "HAZARD LIGHT" when it is not in the transport mode. Location of deployment switch TBD pre-construction.

PORTA-TANK COVER

Two (2) 16 gauge stainless steel wind deflectors shall be fabricated and installed (one (1) front, one (1) rear) of the Porta-Tank rack. A solid painted cover shall be installed on the outside of the wind deflectors.

COLCH28ESTER in a minimum combination of 8" and 12" letters, gold reflective with a black drop shadow shall be provided on the cover.

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WHEEL CHOCKS (COLLAPSIBLE)

Two (2) Zico #SAC-44 collapsible wheel chocks shall be supplied and installed in front of the street side rear wheels (under the compartment assembly) complete with mounting brackets.

PAINT PROCEDURE

All removable items, such as brackets, compartment doors, etc. shall be painted separately to insure finish paint behind mounted items. All compartment un-welded seams exposed to high moisture environments shall be sealed using permanent pliable caulking prior to finish paint.

The inside and underside areas of the complete body assembly shall be painted **body color yellow**, prior to the installation of the body on the chassis.

The interior of the fire body compartments shall be painted.

The chassis frame rails; suspension and axles will be painted **body color yellow** with a polyurethane base paint prior to installation of any airlines or electric systems to ensure proper serviceability.

All removable items such as compartment doors, hinges, trim, bracketry, etc., shall be removed and painted separately to insure complete paint coverage behind all mounted items.

All trim pieces mounted to the apparatus shall be de-burred to eliminate any sharp cutting edges.

The insides of the compartments and the tank shall not be painted, but the exterior of the apparatus body (skirting, etc.) shall be painted the same color as the chassis. The interior of the cabinets will be a polished #4 satin finish.

Paint Color: White over Yellow

CHASSIS PAINT (TWO-TONE)

The cab and body shall be finish sanded and prepared for final paint. Upon completion of final preparation, the cab exterior and body will be painted utilizing the highest quality, state of the art, base paint. Finish paint will be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

The cab exterior will be painted to match purchaser's furnished paint codes. A two tone paint finish will be provided with the break line located approximately 3" below the cab side windows.

A Paint color sample for each color shall be provided to, and approved by the purchaser prior to the painting the chassis or fire body.

The cab roof to just below cab windows shall be painted WHITE PPG code 91328 to match existing apparatus. A PPG paint code will be provided for matching or cross-referencing.

The lower part of the cab and the fire body shall be painted YELLOW PPG code 83841 to match existing apparatus. A PPG paint code will be provided for matching or cross-referencing.

BODY PAINT (TWO-TONE)

The body shall be finish sanded and prepared for final paint. Upon completion of final preparation, the cab exterior and body will be painted utilizing the highest quality, state of the art, base paint. Finish paint will be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

The body will be painted to match purchaser's furnished paint codes. A two tone paint finish will be provided with the break line location TBD during pre-construction meeting.

A Paint color sample for each color shall be provided to, and approved by the purchaser prior to the painting the chassis or fire body.

The upper part of the fire body shall be painted WHITE, to match existing apparatus. A PPG paint code will be provided for matching or cross-referencing.

The lower part of the fire body shall be painted YELLOW, PPG code 83841 to match existing apparatus.

TOUCH-UP PAINT & ASSORTED FASTENERS

A two (2) ounce container with applicator brush of touch-up paint shall be supplied for each color of the finished apparatus body color. This touch-up paint shall be delivered with the apparatus at the time of delivery and include the paint make and number for future reference.

A bag of assorted stainless steel fasteners used in the construction of the apparatus shall be provided to the purchaser at the time of delivery and acceptance of the completed apparatus.

ANTI-CORROSION PROTECTION

The design of the apparatus body is such that the association of different metals is minimized. Where it is unavoidable, an anti-corrosion coating is used between the two metals.

The anti-corrosion material is a dispersion of metallic zinc in a mobile vehicle designed to prevent corrosion caused by electrolysis between the two metals.

When stainless steel screws pass through aluminum, they will be treated with the anti-corrosion coating to prevent the onset of electrolysis.

WHEEL DRESS-UP KIT

Chrome "baby moon" hubcaps shall be installed on chassis wheels. Chrome lug nut covers shall be installed on all wheel lug nuts.

N.F.P.A. STRIPING

Provide a six (6) inch high white triple trim 3M™ Scotchlite 680 stripe (White.)

The stripe shall be applied to at least 50 percent of the cab and body length on each side, and at least 25 percent of the width of the front of the apparatus shall have the reflective material affixed to it.

Provide two (2) 1" 3M™ Scotchlite stripes incorporated into the 3M™ Scotchlite scheme to border the primary 4" 3M™ Scotchlite 680 stripe (White.) stripe on the top and bottom edges. The customer will determine final layout of this configuration.

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N.F.P.A. STRIPING COLOR

The reflective stripe(s) shall be 3M™ Scotchlite 680 stripe (White.) in color.

LETTERING

The apparatus shall be lettered of a style and script comparable to the department's existing apparatus.

Provide lettering and striping computer generated SCOTCH-LITE appliqué with a single color drop shadow and clear coat.

Provide a maximum of sixty (60) three (3) inch letters will be provided to coincide with the Fire Department's existing lettering.

Provide a maximum of thirty (30) five (5) inch letters will be provided to coincide with the Fire Department's existing lettering.

Provide all lettering and striping with an acrylic enamel clear coat.

CHEVRON STRIPING

Chevron striping shall be provided and installed across the entire rear head of the tank. Striping will be 4" wide Color shall be 3983 Yellow 3892 Red reflective and installed in an inverted "V" pattern. NFPA 15.9.3.2.1, 15.9.3.2.

CHASSIS MODIFICATIONS

If chassis cab is equipped with an ignition key it shall be permanently attached to the chassis cab dash per N.F.P.A. codes.

All NFPA pamphlet #1901-2016 warning and information placards shall be provided and installed.

VERTICAL EXHAUST MODIFICATIONS

The chassis exhaust system shall be left as vertical exhaust with the stack being adjusted for height of the apparatus body and chassis after manufacturing.

MUDFLAPS

Mudflaps will be provided and installed to the rear of the chassis front wheels.

Black rubber mudflaps, with Manufacturer's logo, shall be provided and installed behind the rear wheels.

FUEL TANK ENCLOSURE

The fuel tank, and entrance steps will be clad with polished aluminum diamond plate. This will be done in a manner which is both safe and practical. The polished aluminum diamond plate should add to the appearance, not distract from it. All step areas shall be punched and formed raised surfaces for a positive skid resistant surface.

ENTRANCE STEPS ENCLOSURE

The entrance steps beneath the passenger door will be clad with polished aluminum diamond plate. This will be done in a manner, which is both safe and practical. The polished aluminum diamond plate should add to the appearance, not distract from it. All step areas shall be punched and formed raised surfaces for a positive skid resistant surface.

BATTERY RELOCATION

The chassis batteries shall be relocated from the chassis frame rails behind the cab to the lower curbside portion of the pump house assembly. A hinged door and latch shall be provided to provide access to the batteries.

TOW EYE

A 3/4" x 6" single painted rear tow eye will be installed at the rear of the unit, under the rear dump and attached directly to the chassis frame. It shall be surrounded by a rubber boot and trimmed with a 16 gauge stainless steel mirror finish frame assembly.

KUSSMAUL AIR PUMP

Provide a Kussmaul 12 volt air pump, model 091-9, complete with 091-9G airline filter and 091-9H mounting plate. The unit to be completely automatic and controlled by integral pressure switch. Provide a separate 12V fused circuit for this air pump. Mount under driver's seat.

ON BOARD BATTERY CHARGER SYSTEM

Provide a Kussmaul, Model LPC 80 battery saver charger system connected to the 110-volt shoreline disconnect to power charger system for maintaining the vehicle batteries. This system is designed to provide up to 35 amperes to the main chassis batteries and a separate circuit providing up to 10 amperes to charge portable radios and box lights. Install if possible in the compartment under the driver's seat.

A 10 Element, Single bar graph display shall be located in the compartment under the driver's seat adjacent to the shoreline connection to monitor each set of batteries charging status.

TIRE PRESSURE MONITORING

There shall be a Vecsafe LED tire alert pressure management system provided that shall monitor each tire's air pressure. A chrome plated brass sensor shall be provided on the valve stem of each tire for a total of six (6). The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor shall activate an integral battery operated LED when the pressure of the tire drops 8 psi. Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in good working condition, the LED shall immediately start blinking. Pressure to be determined after the apparatus has been live loaded.

AUTOMATIC TIRE CHAIN

Provide an automatic tire chain system for the rear axle with a driver-controlled switch in the cab. Switch shall be provided with a protective flip cover. Air supply shall come from the additional 1,200 cu.in. air tank.

SHORELINE AUTO-EJECT

A KUSSMAUL Super Auto Eject, model O91-55-20-120, with weatherproof yellow cover shall be mounted on the cab exterior immediately adjacent to the rear of the driver's door.

The Super Auto Eject is to be completely sealed to prevent internal contamination of the working components.

The internal switch arrangement of the Super Auto Eject shall be designed to close and open the 120-vac A.C. circuit after the mating connector is inserted and before the connector is removed. This design shall prevent arcing at the connector contacts to provide long life.

The electrical connection shall be provided as a 120 VAC - 20-amp type using a NEMA 5-20P connector.

ELECTRICAL SYSTEM.

The apparatus shall be equipped with a Management System for controlling electrical system devices. This management system shall be capable of performing load management functions and be fully programmable.

The system shall utilize a Controller Area Network to provide control signals for "real time" operation. The system will consist of a Universal System Manager (USM), Power Distribution Module(s) (PDM), and Input Switch Module(s) that communicate with the USM. The functional switches will be located conveniently in the cab dash.

All insulated wiring shall be high temperature GXL or GPT type, in conformance with SAE J 1128 and shall be protected by an oil and temperature loom where possible. Individual wires will be protected by color and numerically coded insulation. All wire end terminals, including locking bulkhead connectors, shall be mechanically fixed to the wire ends by terminal crimping tools.

The electrical system will incorporate a master battery disconnect switch which will be mounted separately from the switch panel (next to the driver's seat). A green battery indicator light will be provided in the chassis cab visible to the driver to indicate when it is in the "on" position. When "off" the batteries will remain connected to the starter but all the power will be off to the rest of the unit.

All electrical and electronic components shall be selected and installed to minimize electrical loads and comply with NFPA #1901 (2016 revision) standards.

At the time of delivery, documentation shall be provided with the following information:

- (1) Documentation of the electrical system performance tests.
- (2) A written load analysis, including the following:
 - (a) The nameplate rating of the alternator
 - (b) The alternator rating under the conditions specified in NFPA 13.3.1
 - (c) Each of the component loads specified in 13.3.3 that make up the minimum continuous electrical load.
 - (d) Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load/
 - (e) Each individual intermittent electrical load

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CAB CONSOLE

One (1) electrical console shall be fabricated and installed between the two (2) front seats. It shall be fabricated from 125 aluminum with removable panel(s) for service. The top of the console shall be clad with a non-glare black vinyl covering for radios, siren, and control switches etc. Details and layout to be determined during pre-construction meeting.

CAB MAP LIGHT

Provide a high intensity gooseneck map light located at the right side of the cab dash

ELECTRICAL SYSTEM SCHEMATICS

Two (2) complete electrical system schematics diagramming each individual circuit shall be provided upon delivery of the apparatus. These schematics shall be unique to this fire apparatus, and shall indicate the circuit, wires (by number, color, function, or any combination), switches, relays, circuit breakers, diodes, etc.

RADIO POWER ** (2) independent circuits

A 12 volt, 60 amp radio circuit with four (4) post fusible block and grounding for department 2-way radios shall be provided and installed in the center cab console. The circuit shall be activated with the master disconnect switch.

A 12 volt, 30 amp circuit with four (4) post fusible block and grounding for department radios shall be provided and installed in the center cab console. The circuit shall be constant power, uninterrupted by the master disconnect switch.

ROCKER SWITCH PANEL

A rocker type switch panel with a "Master switch" and individual switches will be installed on the center console to provide the ability to de-activate individual lighting units, should the driver/officer require it. This panel will be lettered and lighted and conveniently mounted in the console.

12 VOLT ACCESSORY CIRCUITS

Four (4) 12 volt, 15 amp constant hot circuits with fusible block shall be provided in the center cab console for future 12 volt equipment.

DUAL USB SOCKET

There shall be four (4) Blue Sea, Model 1016, dual USB type A charger sockets installed two in dashboard, and one in driver's side and passenger EMS compartment . The socket shall be powered directly to the battery power. Mounted in the center console.

ANTENNA INSTALLATION

Four (4) antenna mounts shall be provided and installed on the antenna bracket. The antenna bracket shall be mounted behind the cab roof and be properly bonded and grounded to the chassis. The antenna coaxes shall run from the antenna mounts to the center console between the driver and officer seats. (Locations to be determined during pre-construction).

EMI/RFI PROTECTION

Apparatus design and construction shall incorporate the latest designs in incorporating Electromagnetic Interference Suppression, which is required to satisfy the radiation limits specified in SAE (Standard for Automotive Excellence) J551, "Performance Levels and Methods of Measurement of Electromagnetic Radiation from vehicles and devices (30-1000 MHz), and of which has been adopted by NFPA 1901. System design and components used shall insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source. EMI/RFI susceptibility shall be controlled by applying immune circuit designs, shielding, twisted pair wiring, and filtering. The electrical system shall be designed for full compatibility with low level control signals and high powered two (2) way radio communication systems. Harness and cable routing shall be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

In order to fully prevent radio frequency interference (RFI), the purchaser shall provide a listing of the type, power output, and frequencies of all radio and bio medical equipment that is proposed to be used on the apparatus.

INTERCOM SYSTEM – SIX SEATED POSITION

A FIRECOM custom designed intercom six-position communication system shall be provided and installed on the apparatus as follows.

INTERCOM- FIRECOM 5200D

A FIRECOM model 5200D DIGITAL INTERCOM 2 RADIO monitoring and primary transmit selection intercom shall be provided and installed in the unit. To include antenna and all necessary cabling and interface with Kenwood TK series mobile radios.

Wireless Base Station WB505R

Provide (1) WB505R wireless base stations to allow for the 2 members to be connected wirelessly.

HEADSET - FIRECOM SERIES- UHW 505 – WIRELESS DRIVER POSITION

There shall be a model UHW 505 wireless headset and base station provided for the driver position. It shall have a (PTT) "Push to Talk" located on the dome. The headset shall come with an adjustable volume, noise canceling electric microphone, adjustable head strap, and flexible style boom for rotation of right or left dress. The headset shall provide high clarity speakers and fully shielded EMI/RFI protected cabling to maximize performance. The liquid foam ear, seals along with the system provides a 24 dB noise reduction.

HEADSET - FIRECOM - UHW 505 – WIRELESS OFFICER POSITION

There shall be a model UHW 505 wireless headset and base station provided for the officer's position. It shall have a (PTT) "Push to Talk" located on the dome. The headset shall come with an adjustable volume, noise canceling electric microphone, adjustable head strap, and flexible style boom for rotation of right or left dress. The headset shall provide high clarity speakers and fully shielded EMI/RFI protected cabling to maximize performance. The liquid foam ear, seals along with the system provides a 24 dB noise reduction.

HEADSET HANGER - FIRECOM SERIES-HGR-1

There shall be Two (2) yellow rubber coated headset hanger hooks.

WARNING SYSTEMS

Clearance/Marker/Identification lights and reflectors will be installed according to DOT regulations.

At the rear of the apparatus three (3) red mini LED marker lights will be installed in the rear light bracket with one on the center line and the lights spaced 6-12" apart. Red LED combination reflector/marker lights will be surface mounted in the lower rear side body section using shock absorbing rubber grommets.

Red reflectors will be installed on the rear tailboard as far apart as possible. The front (amber) reflectors will be incorporated in the turn signals and mid-point amber reflectors will be installed on each side of the body.

STOP/TURN/BACK UP LIGHTS

Stop-tail Light(s):

Two (2) Whelen #600 series, Red, LED Stop-Tail lights shall be mounted, one (1) each side at the rear of the apparatus.

Directional Light(s):

Two (2) Whelen #600 series, Amber, LED Directional lights shall be mounted, one (1) each side at the rear of the apparatus.

Back Up Light(s):

Two (2) Whelen #600 series, Clear, LED Back-Up lights shall be mounted, one (1) each side at the rear of the apparatus and wired to the reverse gear.

The above lights shall be housed in Whelen #PLAST4, chrome plated housings.

BACK-UP ALARM

One (1) back-up alarm shall be installed and wired to the reverse gear. It shall meet the Type D (87 dBA) minimum requirements of SAE J994 and NFPA 1901.

HAZARD LIGHT

A red flashing LED light, located in the driving compartment, shall be illuminated automatically whenever the apparatus's parking brake is not fully engaged and any of the following conditions exist:

- (1) Any passenger or equipment compartment door is open.
- (2) Any equipment rack is not in the stowed position.
- (3) Any other device is opened, extended, or deployed that creates a hazard or is likely to cause damage to the apparatus if the apparatus is moved.

The light shall be marked "**HAZARD LIGHT: DO NOT MOVE APPARATUS WHEN LIGHT IS ON**".

MID-POINT DIRECTIONAL LIGHTS

Two (2) amber colored LED directional/running lights, shall be provided midway along the apparatus, one (1) each side, at approximately running board height (NFPA 1901). These lights shall be waterproof sealed bulb type and mounted in a chrome-plated finish base.

LICENSE PLATE HOLDER

A Cast Products #LP0005-1-A, surface mount lighted license plate holder shall be provided at the rear of the apparatus. The holder shall be of cast aluminum construction with bright finish edges.

ELECTRONIC SIREN

Provide one (1) Whelen # **295SLSA1** 200 watt electronic siren featuring: flush mount remote control head recessed in center dash panel as space allows, "Si-Test" self-diagnostic feature, six function siren, radio repeat and public address.

Provide one (1) Whelen # **SP123BMC** polished aluminum siren speaker, recessed in the front bumper and wired to the electronic siren.

The electronic siren and speaker shall meet the NFPA required SAE certification to ensure compatibility between the siren and speaker.

FEDERAL Q2B SIREN

A Federal Signal #**Q2B-NN**, mechanical siren shall be supplied and installed in the front bumper assembly. Activation shall be through the horn ring in the cab along with a push button siren brake switch on the cab dash. A dash-mounted horn/siren rocker switch shall control Q2B siren / chassis horn. The Q2B siren shall be wired through the load management system to prevent excessive amperage draw. The siren is provided in addition to the required minimum NFPA audible warning requirements. A switch shall be provided to allow for chassis horn / 2Q activation from horn ring.

REAR SCENE LIGHTS

Two (2) Whelen # **90E000ZB**, 8-32 degree opti-scene lights will be mounted, one (1) each side, at the rear of the apparatus. They will be wired to the reverse gear and be used with the back-up lights. There will be an override switch located on the rocker switch panel in the cab to activate the rear scene lights when the unit is not in the reverse gear.

SIDE SCENE LIGHTS (SIDE)

Two (2) Whelen Pioneer PLUS PFP1R15 LED, flush mount scene lights, (1) one each side, mounted at the front upper corner of the fire body and controlled from the master console in the cab.

LED GROUND/STEP LIGHTS

Four (4) 4" LED clear lens underbody lamps shall be supplied to provide illumination on the ground in areas designed for personnel to climb onto the apparatus. The lights will be controlled automatically by use of the chassis parking brake.

The lights shall be positioned as follows:

Two (2) LED lights will be installed under the pump panel running boards,
One (1) each side.

Two (2) LED lights will be installed under the rear tailboard assembly,
one (1) each side.

All of these lights shall be mounted so as to be fully enclosed and not to expose any wiring.

LED REAR PLATFORM WORK LIGHTS

Two (2) LED clear lens sealed lamps will be mounted in the rear beaver tail assembly pointing towards the center over the rear tailboard area as "work lights". The lights will be activated when the parking brake is set.

LED CAB ENTRY/EXIT LIGHTING

One (1) 4" LED light shall be mounted beneath each door. These lights shall be mounted on an approximate 30 degree angle to provide illumination on areas under the driver and crew riding area exits. All cab entry/exit lights will automatically activate when any of the chassis doors are opened.

COMPARTMENT LIGHTING

All compartments will have (2) two LED surface-mounted strip lighting one each side, full height that is activated automatically when a compartment door is opened.

ENGINE COMPARTMENT LIGHT

One (1) switched light shall be provided and installed inside the engine compartment. This is to provide lighting for vehicle maintenance.

AIR HORNS

One (1) pair of Grover 1510 air horns or equal shall be supplied and installed one (1) each side of the chassis cab hood assembly. The air horns shall be mounted with mounting brackets.

AIR HORN ACTIVATION

A foot switch on the driver's side will control the air horns. Provide a manual shutoff valve to the horn air switch.

AIR PROTECTION VALVE

An air pressure protection valve shall be installed which prevents the use of air horns or other air operated accessories when the brake system air pressure drops below 80 psi, per NFPA standards.

AIR COMPRESSOR / BATTERY CHARGER

A Kussmaul #091-9-1000-S-KIT, air compressor / battery charger will be installed to maintain the apparatus's batteries and air tanks while the truck is not in use. A super auto eject receptacle shall be included to release the plug automatically upon energization of the starter solenoid. The receptacle shall be installed on the driver's side pump panel and be protected by a weatherproof spring loaded cover plate.

FRC 360 INVIEW CAMERA SYSTEM

The system shall include the following (4) HD Ultrawide 1080p Cameras, (1) ECU with built in DVR, (1) External GPS Receiver, (1) Green Pushbutton—Screen Control, (1) Red Pushbutton—Event, (1) Black Pushbutton—Overlay, (1) Standard Definition Splitter, (1) IR Sensor, (1) Remote Control. A 7 inch monitor mounted in the cab readily observable by the operator.

WATER LEVEL GAUGE FRC Tank Vision Pro 400

A LED Tank Display, Maxvision WLA280-A00 with fractional scale multicolor tank level display shall be provided and installed at the rear of the tank (above the quick dump). The display features wide angle viewing and four ultra-bright LED's for high visibility even in direct sunlight. The system uses a pressure transducer which shall be mounted into the wall of the tank.

WATER LEVEL GAUGE FRC Tank Vision Pro 400

An additional 9 LED with fractional scale multicolor tank level display shall be mounted on the driver's side pump panel.

CAB MOUNTED TANK LEVEL GAUGE FRC Tank Vision

One (1) A miniature 5-LED cab display shall be provided in the chassis cab consol.

NFPA CERTIFIED LIGHTING REQUIREMENTS

The optical warning system on the fire apparatus shall be capable of two (2) separate signaling modes during emergency operations. The first mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is **CALLING** for the "Right-Of-Way". The second mode shall signal that the apparatus is stopped and is **BLOCKING** the "Right-Of-Way".

The switching between modes shall be provided by a sensor that senses the position of a parking brake or the park position of an automatic transmission. When the master optical warning system switch is closed, and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for Right-Of-Way shall be energized. When the master optical warning system is closed, and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of the Right-Of-Way shall be energized. The system shall be permitted to have a method of modifying the two signaling modes.

WHELEN - LED LIGHTING PACKAGE

The following warning light package includes the entire minimum warning light and actuation requirements for the 2016 edition of the NFPA 1901 Fire Apparatus Standard.

Provide the following lighting as specified. It shall meet the requirements for both "Clearing Right of Way" and "Blocking Right of Way" as noted.

LIGHT PACKAGE ACTUATION CONTROLS

The entire warning light package shall be actuated with a single warning light switch in the cab switch panel. The wiring for the warning light package will engage all of the lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic control system will be provided to switch the warning lights to the "Blocking Right of Way" mode when the vehicle parking brake is engaged.

ZONE A (FRONT - UPPER)

CAB ROOF LIGHT BAR

Whelen (55) fifty five inch Freedom® IV Rota-Beam™ Super-LED Model F4R7RRRR light bar red and white with clear lens are to be mounted on the cab roof. As required by NFPA Pamphlet #1901, the white sections will automatically turn off when in the blocking right-of-way mode. Pre wired for GTT Opticom F4R795H

GTT OPTICOM

Provide a GTT 795H Opti-com system installed in roof light bar as detailed in "NFPA Lighting Package" section.

ZONE A (FRONT - LOWER)

Two (2) Whelen #60R02FRR, 600 series, red Super-LED warning lights (clear lens) with chrome flanges shall be mounted in the chassis grill, one (1) each side. They shall be installed with stainless steel backing plates.

ZONE C (REAR - UPPER)

Two (2) (21") twenty one inch Whelen Mini Freedom® IV Rota-Beam™ Super-LED red with amber center and clear lens shall be provided on light pedestals, one (1) each side at the upper rear sides of the apparatus. The light pedestals will be fully enclosed so as not to expose wiring.

ZONE C (REAR - LOWER)

Provide two (2) Whelen model M6 series M6RC LED, mounted one (1) each side the rear body taillights in the **Whelen M6FCV4** Composite Housing. Clear lenses shall be provided.

ZONE B & D (SIDE REAR - LOWER)

Provide two (2) Whelen model # TIR-6 LED Red with polished mounting flanges mounted one (1) each side on the rear body fender or as close to the rear of the unit as practical and facing to each side of the unit. The lights shall be equipped with clear lenses.

ZONE B & D (SIDE FRONT - LOWER)

Provide two (2) Whelen model # M6 series M6RC LED with polished mounting flanges M6FC mounted one (1) each side of the front fender facing to each side of the unit. The lights shall be equipped with clear lenses.

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ZONE B & D (SIDE CENTER - LOWER)

Provide two (2) Whelen model # M6 series M6RC LED with polished mounting flanges model M6FC mounted one (1) each side at the center of the unit facing to each side of the unit. The lights shall be equipped with clear lenses.

WARNING LIGHT SYSTEM CERTIFICATION

The warning light system specified will have a total amperage draw of 45 AMPS with all lights activated in either the "Clearing Right of Way" or the "Blocking Right of Way" mode.

The light system manufacturer shall meet all of the requirements as noted in chapter 13 of the Current edition of the NFPA 1901 Fire Apparatus Standard shall certify this warning light system. Certification shall be supplied at the time of delivery.

REAR DIRECTIONAL LIGHT (WHELEN)

Provide one (1) Whelen TAZ86 Super-LED® Traffic Advisor™, 30" Long-Traffic Advisor, Amber, rear directional light. Light to be mounted in aluminum tread plate enclosure below the hose bed. A control module shall activate the directional light. The control module will be conveniently located near the driver's position. The rear directional light will be wired through the load management system of the unit.

Colchester Fire Department Colchester, Connecticut

FIRE PUMP - Hale Side Kick PTO Driven Pump 1000-GPM Pump with 6" suction

The pump shall be of a size and design to mount on the truck chassis rails, and have the capacity of 1,000 gallons per minute (U.S. GPM), NFPA 1901 rated performance.

The pump must deliver the percentage of rated capacity at the pressure listed below:

- 100% of rated capacity at 150 psi net pump pressure.
- 100% of rated capacity at 165 psi net pump pressure.
- 70% of rated capacity at 200 psi net pump pressure.
- 50% of rated capacity at 250 psi net pump pressure.

When dry the pump will be capable of taking suction and discharging water with a lift of 10 feet in not more than 30 seconds through 20 feet of appropriate size suction hose with strainer attached.

The entire pump shall be assembled and tested at the pump manufacturer's factory.

The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet or exceed its rated performance.

To ensure minimum vibration even at full capacity the pump will be mounted on the frame rails, using extra heavy duty mounting brackets and grade eight bolts, in a position such that the drive line shafts are properly aligned to have the same angular velocity at each end.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance specs as outlined by the latest NFPA Pamphlet No. 1901. The pump shall be free from objectionable pulsation and vibration.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

MANUALS

Two (2) manuals covering the pump, and other necessary working parts of the pump shall be provided with apparatus at the time of delivery.

OVERHEAT PROTECTION MANAGER OVERHEAT PROTECTION MANAGER:

The OPM consists of an illuminated warning light on the operator's panel whenever the pump approaches an overheat condition. Optional audible alarm is available. AUTOMATIC DISCHARGE PRESSURE RELIEF VALVE

An automatic discharge pressure relief valve will be connected directly to the pump manifold and controlled by a pilot valve located on the pump operator's control panel. The relief valve shall be closed normally and open against pump pressure. The range of operation for the relief valve shall be 90 to 300 psi of discharge pressure. The pilot valve controls shall consist of one to adjust relief valve operating pressure and one to place the relief valve in and out of operation in the event that the relief valve should fail, so that the pump will remain operable for the complete range of the pump's rated capacity.

Colchester Fire Department Colchester, Connecticut

PRIMING PUMP

Priming System: An electric, oil-free rotary vane primer mounted directly on a split-shaft pump 12-volt.

SPECIFICATIONS:

- : **PERFORMANCE:** Vacuum capability of 24 in. (Hg 610 mm Hg).
- : **PUMP TYPE:** Heat treated, anodized aluminum specially coated for wear and Corrosion resistance.
- : **MOTOR:** Direct current, totally enclosed; 4.5 in. (114 mm) diameter.
- : **CONTROL VALVE:** Single action, push-pull control valve, all bronze construction. Designed for mounting on pump or panel for remote control operation.

PUMP SHIFT (ELECTRIC OVER AIR)

The pump shift control shall be activated by a switch located on the chassis cab dash.

The gear shift from road to pump shall be powered by the chassis air supply and a complete shift will be indicated by a green light.

An electronic lockup shall be provided in the transmission to lock the transmission into the pumping gear (usually fourth gear lockup).

A nameplate indicating the chassis transmission control selector position to be used for pumping shall be provided in the cab and located so that it can be easily read from the driver's position.

A total of three (3) green indicator lights shall be provided to indicate to the pump operator when the pump has completed the shift from the road to the pump position.

Two (2) green lights to be located in the cab, one will be labeled "**PUMP ENGAGED**" which illuminates when the pump shift has been successfully completed. The other light is to be labeled "**OK TO PUMP**" and will be illuminated when the pump shift has been completed and the transmission is engaged in the proper pumping gear.

An "**OK TO PUMP**" indicator light shall also be furnished on the pump operators control panel adjacent to the throttle control.

AUXILIARY SUCTION INLET (STREETSIDE)

Two (2) auxiliary 2-1/2" NST gated inlet shall be provided (1) each side at pump panel. The valve shall be the 1/4 turn ball type with control at the pump operator's control panel. The valve shall be located behind the pump panel.

The auxiliary inlet shall be equipped with a chrome swivel, removable cleanable strainer, male plug and retaining chain. An individual drain shall be furnished. The drain shall be piped toward the ground.

SUCTION INLETS

A 6" non-gated suction inlet will be located on road side of the apparatus. The inlet will have a long handled chrome plated cap and removable strainers.

STREETSIDE DISCHARGES

Two (2) 2-1/2" discharge piped 3" will be installed on the street side of the apparatus. The discharge valves shall be Akron, 1/4 turn, full-flow, drop-out, self-locking type and controlled from the pump operator's panel. The 2-1/2" discharge valves shall be gated with easy operating controls. The 2-1/2" outlet shall be equipped with chrome plated 2-1/2" NST male, 30 degree droop snoot and ends with chrome 2-1/2" by 1-1/2" reducer with caps with chains. An individual drains shall be furnished.

CURBSIDE DISCHARGE (ONE)

One (1) 2-1/2" discharge piped 3" will be installed. The discharge valves shall be 1/4 turn, full-flow, drop-out, self-locking type and controlled from the pump operator's panel. The 2-1/2" discharge valve shall be gated with easy operating controls. The 2-1/2" outlets shall be equipped with chrome plated 2-1/2" NST male, 30 degree droop snoot and ends with chrome 2-1/2" by 1-1/2" reducer with caps with chains. An individual drain shall be furnished.

DRAIN VALVES

A Class 1, 1/4 turn and/or automatic drain valve shall be installed for all 1-1/2" or larger discharges. Cable actuated drains are not acceptable.

MASTER DRAIN

A master drain of rotary type, bronze construction to be provided on the pump. Control for this valve to be located so operator does not have to crawl under the apparatus to operate. Master pump drain control is to be operated from the left side of the apparatus. All pump passages, including relief valve, shall be connected to the master drain. Cable actuated drains are not acceptable.

TANK TO PUMP

The 4.0" tank to pump valve. The valve shall be actuated by air switch located on the pump operator's panel.

A check valve shall be provided in the tank to pump line that prevents unintentional back-filling of the water tank through the line (NFPA #1901).

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TANK REFILL

There shall be one (1) 2", 1/4 turn, pump to tank valve located on the discharge side of the pump piping to the tank. Valve controls shall be Akron 8630 position indicator for gear actuated swing out valves.

The valve and pump shall be connected to the tank by use of stainless steel fittings and flexible hose to eliminate stress on the lines.

VALVES FOR PUMP OPERATION

The main pump discharges and all 1" or larger in-line, suction and discharge valves will be full flow, gear actuated swing out style, to simplify servicing. Valves controls shall be Akron 8630 position indicator for gear actuated swing out valves.

All 3" or larger discharge valves will be equipped with a slo-cloz option which hydraulically decelerates the opening and closing of the valve to comply with NFPA Pamphlet #1901 recommendations.

STAINLESS STEEL PLUMBING, AND HOSE

All inlet and outlet lines will be plumbed with either stainless steel pipe, flexible polypropylene tubing or synthetic rubber hose reinforced with hi-tensile polyester braid. All hose's will be equipped with brass or stainless steel couplings. All stainless steel hard plumbing will be a minimum of a schedule 10 wall thickness.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping will be equipped with victaulic or rubber couplings.

Plumbing manifold bodies will be stainless steel.

All drain lines will be extended with a hose to drain below the chassis frame.

All water carrying gauge lines will be of flexible polypropylene tubing.

All piping, hose and fittings will have a minimum of a 500 PSI hydrodynamic pressure rating.

All lines will drain through either the master drain valve or will be equipped with individual drain valves. One (1) individual drain valve will be installed for each gated suction or discharge 2-1/2" or larger in size.

The entire pump assembly, including all valves, piping and suction lines will be subjected to a hydrostatic test consisting of both a pressure and a vacuum test. The vacuum test consists of developing a vacuum of 22 in. HG (74.5 kPa) and holding for 5 minutes without losing more than 10 in. of vacuum.

PUMP ANODES

Sacrificial anodes will be provided in the pump housing, one for the discharge part of pump and one for the suction part of pump.

SUCTION PRESSURE RELIEF VALVE

A suction pressure relief valve, preset at 125 PSI, will be installed on the suction side of the pump. The adjustable pressure relief valve will be of cast brass construction and include a stainless steel spring and rubber seat. If the outlet discharges it shall discharge in a manner that will not expose personnel to high pressure water streams. The discharge outlet will be constructed of 2-1/2" piping and be equipped with a 2-1/2" NPTF x 2-1/2" NSTM adapter. The outlet will be labeled "**INTAKE PRESSURE RELIEF OUTLET - DO NOT CAP**".

RELIEF VALVE/PRESSURE CONTROL SYSTEM

The apparatus pump shall be equipped with a Pressure Master Relief Valve System designed to automatically relieve excessive pump pressure when operating positive incoming flows. The system shall self-restore to the non-relieving position when pressure is no longer present.

The relief valve system shall be totally mechanical and consist of an internal relief valve to bypass water to the suction side of the pump, an external relief (dump) valve to discharge water to atmosphere, and a single panel mounted control valve to provide complete control of pump pressure to the pump operator.

A single panel mounted control shall permit the pump operator to "set" a desired relief pressure for both internal and external relief valves. The panel control shall have an easy to set adjustment with indication of pressure setting.

The total relief valve system shall function by monitoring and controlling pump pressure and relieve excessive pressure by first utilizing the internal relief valve (returning flow to the pump suction). If excessive pressure remains, a secondary external relief valve responds by discharging excessive pressure to the atmosphere. The staging of the internal and external relief valves to operate in series ensures maximum protection against over pressure and eliminates the indiscriminate discharging of water to the ground.

The external relief (dump) valve shall be mounted on the discharge side of the pump where discharged water flowing through the valve provides a self-cleaning process and virtually eliminates the possibility of the valve remaining in an open position due to contamination.

One amber light shall be provided on the pump operator's panel which shall illuminate when the internal relief valve is open. The same light shall flash intermittently when both the internal and external valves are open.

Both relief valves shall be designed to open into discharge flows which provides the advantage that in a normally closed position both relief valves are maintained in a closed position by virtue of pump discharge pressure. All functional components of the relief valve system that are in contact with water shall be bronze material.

The total relief valve system must meet all existing NFPA standards for Pressure Control Devices and Intake Pressure Relief Systems incorporated into one interconnected system.

HEAT EXCHANGER

A supplementary heat exchanger of bronze construction, with tubing and "Open-Closed" control valve on operator's panel is to be provided. Design shall be to allow for use of water from discharge side of the pump for cooling of coolant circulating through the engine cooling system without intermixing. The heat exchanger shall be connected to the drain valve to prevent damage caused by freezing.

HOSE BED/DUNNAGE:

The hose bed located over the pump panel shall be constructed from 3/16" aluminum sheeting and lined with black Turtle Tile decking. Two (2) outer hose bed walls constructed from 3/16" aluminum shall be installed one (1) on each side of the pump house cross-lay hose bed.

HANDRAILS:

Two (2) NFPA non-slip handrails shall be installed one (1) each side on the pump house light shield assembly. The handrails shall be secured against rotation in matching chrome-plated stanchions. These stanchions shall be mounted on molded rubber gaskets and fastened to the apparatus with stainless steel bolts and nylon lock nuts. A center stanchion will be installed on each handrail for additional support.

PUMP HOUSE ENCLOSURE INTERIOR LIGHTS:

Two (2) LED pump house lights shall be provided in the pump house enclosure. These lights shall be mounted in the top of the pump house and be controlled individually by a switch mounted internally in the light.

RUNNING BOARDS:

A step shall be fabricated from non-slip material and installed to extend the full width of the pump panel on each side. The step shall line up with the outside edge of the apparatus body.

RUNNING BOARD(S) STEP LIGHTS:

Two (2) recessed LED flood lights shall be provided one (1) each side of the apparatus in the forward face of the front compartments. These lights will be activated when the park brake is set.

PUMP HOUSE SIDE PANEL LIGHTING

A stainless steel light bracket is to form a pump panel drip rail. A minimum of three (3) LED panel work lights shall be installed in this bracket on both the street side and curbside. The rear light will act as a step light and be illuminated with the application of the park brake. The remaining pump house work lights will be controlled by the pump panel work light switch.

HOSE BED COVER

A Black hose bed cover constructed of 16 oz. Heavy-duty criss-crossed reinforced nylon shall be provided. Cover shall be fire retardant vinyl and installed over hose bed. The cover shall have shock cord fasteners installed around the perimeter of the hose bed. The end of the hose bed cover shall be split into three section and be weighted and cover the hose bed opening.

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PUMP OPERATOR'S PANEL

All pressure and compound gauges to be Class 1 liquid filled. Gauges shall be equipped with white face and black lettering.

The following items shall be furnished on the pump operator's panel:

One (1) 4-1/2" Class 1 master pressure gauge, 0-600 PSI, silicone filled.

One (1) 4-1/2" Class 1 master vacuum gauge, -30-0-600 PSI, silicone filled.

One (1) 2-1/2" individual pressure gauge for each 1-1/2" discharge or larger and/or pre-connect, 0-400 PSI, silicone filled.

One (1) water level readout indicator.

One (1) - Engine RPM Display
- System Voltage Display and Alarm
- Engine Oil Pressure Display and Alarm
- Engine Water Temperature Display and Alarm

One (1) set of UL test ports for pressure and vacuum.

One (1) auxiliary engine cooler valve control (heat exchanger).

One (1) rocker style pump panel work light switch with indicator light.

One (1) FRC throttle control.

One (1) relief valve control.

One (1) primer control.

All discharge and/or pre-connect controls.

One (1) tank fill / pump bypass valve control.

One (1) tank to pump valve control.

One (1) pump engaged indicator light.

One (1) pump panel light(s) and shield assembly.

One (1) master drain control.

One (1) auxiliary suction control.

A highly polished trim plate shall be provided around each discharge port and suction inlet opening to allow accessibility to valves for service and repairs.

THROTTLE CONTROL FRC Xcell.

A FRC Xcell screw type hand throttle control shall be mounted on the pump panel and interfaced with the chassis engine computer.

COLOR CODED IDENTIFICATION PLATES

Each control valve, gauge and discharge outlet shall be labeled with a color coded, die cast, etched, zinc identification plate. For ease of viewing and quick identification, the plates shall be a minimum of 3/4" high x 2-1/2" wide. For standardization, color coding shall be in accordance with the recommendations of NFPA Pamphlet #1901.

PUMP SAFETY FEATURES

When the apparatus is equipped with an automatic transmission, an interlock board shall be provided to ensure that the pump drive system components are properly engaged in the pumping mode of operation, so that the pumping system can be safely operated from the pump operator's position.

Any control device used in the pumping system power train between the engine and the pump shall be equipped with a means to prevent unintentional movement of the control device from its set position.

A plate indicating the chassis transmission shift selector position to be used for pumping shall be provided in the driving compartment and located so it can be easily read from the driver's position.

Where an automatic transmission is provided and where the pump is driven by a transmission thru a pump gearbox (midship) and is used for stationary pumping with the chassis transmission in gear:

A) Two (2) green indicator lights shall be located in the driving compartment. One (1) indicator light shall be energized when the pump drive has been engaged and shall be labeled "**PUMP ENGAGED**". The second light shall be energized when both the pump drive has been engaged and the chassis transmission is in high gear lock-up and shall be labeled "**OK TO PUMP**".

B) One (1) green indicator light on the pump operator's panel shall be provided. The green light shall be energized when both the pump drive has been engaged and the chassis transmission is in high gear lock-up. The green light on the pump operator's panel shall be positioned adjacent to and preferably above the throttle control and shall be labeled "**WARNING: DO NOT OPEN THROTTLE UNLESS LIGHT IS ON**".

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CERTIFICATION TEST- U.L.

One (1) certification test shall be performed at the manufacturers on site testing facility by **Underwriters Laboratories.**

The certification shall include at minimum:

- A) Pumping Test - NFPA 11-2
- B) Pumping Overload Test - NFPA 11-3
- C) Pressure Control Device Test - NFPA 11-4
- D) Priming Device Test - NFPA 11-5
- E) Vacuum Test - NFPA 11-6
- F) Water Tank to Pump Flow Test - NFPA 11-7

A test plate shall be provided at the pump operator's position that gives the rated discharges and pressures together with the speed of the engine as determined by the certification test. The plate shall be completely engraved with all information at the factory and attached to the vehicle prior to delivery. The original U.L. Certificate shall be provided upon acceptance and payment of the apparatus in full.

N.F.P.A. TAG REQUIREMENTS

A permanent plate in the driving compartment shall specifying the quantity and type of the following fluids (when applicable) used in the vehicle:

- (1) Engine oil
- (2) Engine coolant
- (3) Chassis transmission fluid
- (4) Pump transmission lubrication fluid
- (5) Pump primer fluid
- (6) Drive axle(s) lubrication fluid
- (7) Air conditioning refrigerant
- (8) Air conditioning lubrication oil
- (9) Power steering fluid
- (10) Cab tilt mechanism fluid
- (11) Transfer case fluid
- (12) Equipment rack fluid
- (13) Air compressor system lubricant
- (14) Generator system lubricant
- (15) Front tire cold pressure
- (16) Rear tire cold pressure

An accident prevention sign that states "**MAXIMUM SEATING CAPACITY** "___" shall be provided and located in the chassis cab in an area that is visible to the driver.

An accident prevention sign that states "**ALL OCCUPANTS MUST BE SEATED AND BELTED WHEN APPARATUS IS IN MOTION**" shall be provided and located in the chassis cab in an area that is visible to the driver.

An accident prevention sign that states "**OVERALL HEIGHT OF APPARATUS** ____" shall be provided and located in the chassis cab area that is visible to the driver.

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One "Final Stage Label" shall be attached to the driver's side door jam. The label shall certify that the complete vehicle conforms to the federal motor vehicle safety standards, which have been previously fully certified by the incomplete vehicle manufacture or by the intermediate vehicle manufacture and have not been affected by the final stage manufacture.

A warning label that states "**WARNING: DEATH OR SERIOUS INJURY MAY OCCUR if proper operating procedures are not followed. The pump operator and all individuals connecting supply or discharge hoses must be familiar with operator manual, water hydraulics hazards, and component limitations.**" shall be provided and located on the pump operator's panel.

Two (2) accident prevention signs that states "**DANGER: DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION DEATH OR SERIOUS INJURY MAY RESULT**" shall be provided and installed one (1) each side at the rear of the apparatus.

NFPA 1901-2016 COMPLIANCE TESTS

VEHICLE STABILITY:

When the fire apparatus is loaded to its maximum in-service weight, the height of the vehicle's center of gravity shall not exceed the chassis manufacturer's maximum limit.

WEIGHT DISTRIBUTION:

When the fire apparatus is loaded to its maximum in-service weight, the front-to-rear weight distribution of the apparatus as defined in **Section 12.1** shall be within the limits set by the chassis manufacturer.

The front axle loads shall not be less than the minimum axle loads specified by the chassis manufacturer under full load and all other loading conditions.

LOAD DISTRIBUTION:

Using the information supplied by the purchaser, the apparatus manufacturer shall calculate the load distribution for the apparatus.

The manufacturer shall engineer the fire apparatus to comply with the gross axle weight ratings (GAWR), the overall gross vehicle weight rating (GVWR), and the chassis manufacturer's load balance guidelines.

The fire apparatus, as supplied by the manufacturer, shall have a side-to-side tire load variation of no more than 7 percent of the total tire load for that axle or the limits allowed by the axle or component manufacturer.

APPARATUS PERFORMANCE:

The apparatus shall meet the requirements of this standard at elevations of 1000 ft (300 m) above sea level.

The apparatus shall meet all the requirements of this standard while stationary on a grade of 6 percent in any direction.

The apparatus shall meet requirements of this standard in ambient temperature conditions between 32 degrees F (0 degrees C) and 110 degrees F (43 degrees C).

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ROADABILITY:

The apparatus, when fully equipped and loaded as defined in Section 12.1, shall be capable of the following performance while on dry, paved roads in good condition:

- (1) From a standing start, the apparatus shall be able to attain a speed of 40 mph (64.3 kmph) within 25 seconds on a level road.
- (2) The apparatus shall be able to attain a minimum speed of 55 mph (88.5 kmph) on a level road.
- (3) The apparatus shall be able to maintain a speed of at least 35 mph (56 kmph) on any grade up to and including 6 percent.

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

SERVICEABILITY:

The apparatus shall be designed so that all the manufacturer's recommended routine maintenance checks of lubricant and fluid levels can be performed by the operator without the need for hand tools.

Where special tools are required for routine service on any component of the apparatus, such tools shall be provided with the apparatus.

Apparatus components that interfere with repair or removal of other major components shall be attached with fasteners, such as cap screws and nuts, so that the components can be removed and installed with ordinary hand tools. These components shall not be welded or otherwise permanently secured into place.

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ADDITIONAL EQUIPMENT ALTERNATE # 1

Qty	Description	Unit Cost	Total Cost
1	Elkhart Model #B-375-GA, 1-1/2" ball shutoff and pistol grip uncolored. The lightweight, Elk-O-Lite shutoff shall have a Tab-shaped handle with double stops that controls a UHMWPE seat with a full round metal ball. The shutoff shall have a 1-1/2" NH free swivel base with a 1-1/2" NH male outlet and a 1-3/8" waterway.		
1	Elkhart Model # ST-185-XD-CAFS, handline tips. This tip shall have a 1-1/2" female NH base with a 15/16" & 1-1/8" discharge. The construction of this tip shall be lightweight, Elk-O-Lite with a black rubber bumper and gasket. The tip shall have a knurling design at the end of the tip for ease of handling and grip.		
1	Elkhart Model #281A, Mini Stream Shapers shall be provided. This stream shaper shall be used in conjunction with an Elkhart smooth bore tip. The tip shall be of Elk-O-Lite construction with a 1-1/2" NH female inlet and 1-1/2" NH male outlet with replaceable acetyl vanes.		
1	Kocheck 5" Storz x 2 1/2" NH Female 3-Way Siamese-Clappered 30K0525		
1	Hydrant Valve Kocheck 12K45205		
1	Kocheck 5" storz X 3 way Clappered Siamese 30K0525		
2	Kocheck 6" power siphon JS60		
1	Elkhart model B-100-A gated wye 2-1/2" NST F X (2) 1-1/2" NST M		
1	Elkhart model B-97-A, gated wye, 2-1/2" F.NST x (2) 2-1/2" M. NST		
1	Aluminum frame 3000 gallon Fol-Da-Tank, FDTA-3000-with 22 oz. yellow HPR® High Performance Rubber liner.		
2	Kocheck LL60 Low level strainers with jet siphon		
2	Kocheck #TT60 6" Holley transfer tubes with 1 1/2" swivel FM.		
2	Kocheck #36R2525, 2-1/2" NST double male		
2	Kocheck #35R2525, 2-1/2" NST double female swivel		

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ADDITIONAL EQUIPMENT ALTERNATE # 1 CONTINUED.

2	Kocheck # 35R151, 1-1/2" NST double male		
2	Kocheck #35R1515, 1-1/2" NST double female swivel		
2	Elkhart 2-1/2" X86A, hydrant gate valves		
1	Kocheck 5" Storz x 2 1/2" NH Female 3-Way Siamese-Clappered 30K0525		
6	2-1/2" chrome plated #653 tri-loc mounting plates. South Park Crome		
1	Akron Brass 6" X 5" LDH intake relief Revolution 7982		
4	Kocheck #S54R325 3" Storz x 2 1/2" swivel Female NST Thread		
4	Kocheck #S36S325 3"x 2 1/2" rigid male NST Thread		