

## ***Fall Creek Fire Department Bid Specification***

(1)

A. Supply a Freightliner Glider Kit.

\*\*Use Fall Creek Fire Department's existing engine and transmission from wrecked truck.\*\*

B. Supply and install two new air horns, one on each side of the hood. These will be connected to the pre-wired system of the glider kit.

**Bidder Comply**

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### **Body**

(2) Body to be comprised of two "Side Pack" compartment modules. Driver side module to include one compartment in front of rear wheels, and one compartment behind the rear wheels. The curb side module to include two compartments in front of the rear wheels, and one compartment behind the rear wheels.

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(3) Compartment wall material will be 3/16" thick 3003 smooth aluminum to be break pressed into shape for better strength and weather seal with welds on the inside and outside of compartments. All top surfaces will be 3/16" or 1/8" thick bright aluminum tread plate. The top surface covering the compartments will be reinforced where needed. The outer edge will be turned down to form a drip rail.

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(4) Compartment floors will be 3/16" thick 3003 smooth aluminum reinforced with 3" x 1" aluminum channel running down the center, end to end underneath the floor plate. The floors will be the sweep-out design.

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(5) Wheel opening area will be painted. Fenderettes will be polished stainless steel.

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(6) The body "Side Packs" are to be supported and isolated by a system that consists of 3/4" thick rubber pads that are a minimum of 20" long and 2.5" wide; and 2 1/2" X 2 1/2" X 1/4" square tubing that runs across the truck frame from one extreme side of body to the opposite side. This system shall have a minimum of 12 pads and 6 cuffs. There shall be three (3) sets of this type on the driver's side and three (3) sets of this type on the curb side of the body for support. The rubber pads are placed on top and on bottom of the square tubing and is cuffed and bolted to the supporting cabinet wall. The cuff is to be made up of 1/4" channel with 90 degree flanges that sandwich the steel tubing and rubber pads to the cabinet wall. The steel tubing is to have steel flanges that are welded to the tubing and bolted to the chassis. The steel tubing is to be supported by gussets that reach from the cabinet wall to the frame. The steel tubing will

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be reinforced where needed. This method is designed to reduce metal/aluminum fatigue and to give 30 years of service.

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(7) Each compartment will have R.O.M. brand roll up doors with a brushed aluminum finish.

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(8) All compartments will have LED lights mounted in the best way for maximum illumination (total of four) and will be wired with switches so the lights come on when the doors are opened.

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(9) There will also be a door open alarm and light system in cab of chassis in center console. This system will be activated when the park brakes are released and there is a compartment door open.

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(10) The 3/16" thick front end wall of the body "Side Packs" will be capped with 16 gauge bright aluminum tread plate.

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(11) The driver's side compartment in front of the rear wheels (L1) will be approximately 62" overall wide x 36" overall high x 25" deep with a rollup door. The compartment behind the rear wheels on the driver's side (L2) will be approximately 27.25" wide x 36" overall high x 25" deep with a rollup door.

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(12) The curb side compartments in front of rear wheels (R1) will be approximately 62" overall wide x 36" high x 25" deep with a rollup door. The compartment behind the rear wheels on the curb side will be approximately 27.25" wide x 36" overall high x 25" deep with a rollup door. (Note: All compartments will be of the sweep out design).

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(13) Battery Box will be used the cab at step area, driver's side.

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(14)

- A. There shall be 3/16" thick aluminum high walls that will weld to the top of the lower compartment and rear wheel opening area. These walls will be approximately 153" long x 53 1/2" high.
- B. There shall be an ATP front cross over wall that will be bolted in place. This wall will be approximately 53 1/2" high x 70" wide.
- C. There shall be a smooth aluminum panel that will be bolted in place across the rear of the body with the necessary frame work. NOTE: Chevron stripes will be applied to the panel and the rear walls of each side compartment module.
- D. Fabricate and install a high side compartment on the driver's side of the body above the existing lower compartment. This high side compartment will be fabricated from 3/16" smooth aluminum and will be approximately 153" long x 13 1/2" deep x 43 1/2" high. This compartment will have three rollup doors complete with LED

compartment lights at each door that will activate when the doors are in the open position.

- E. Fabricate and install an ATP cover for both the top of the high side compartment on the driver's side and on top of the lower side compartments on the curb side. This will be fabricated from 1/8" thick anti-slip ATP materials and will be bolted in place.

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(15) Supply and install a steel tailboard framework at the rear of the body. This will be fabricated from 2½" x 2½" x 3/16" square tubing, 2" x 2" x ¼" angles, 2" x 2" x 1/8" angles and ½" thick flat bars. This frame work will be bolted to the chassis frame. The steel tailboard framework will be covered with 1/8" thick ANTI-SLIP bright aluminum tread plate and will be approximately 10" deep. Supply and install two (2) rear tow hooks welded to the rear body sub frame.

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(16) Supply and install a red Hypalon Hose Bed Cover. The cover shall have turn style fasteners. There shall also be stretch cord with hooks to secure the rear of the cover.

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### **Body Paint**

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(17) The body and all related parts will be chemically treated to remove all contaminates. Surfaces will be sanded and coated with DP40 and DP48. This is PPG sealer type materials. Then a PPG two part poly primer is used. This material is scuffed and block sanded. A final triple coating of PPG Concept Urethane, color coded to match chassis color is applied. The interior shall have a natural aluminum finish.

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### **Electrical & Wiring**

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(18) All wiring will be function or color coded, 12 gauge (or greater) and will be protected by wire loom with a temperature rating of 345 degrees F. Rubber grommets will be inserted in all areas where wire passes through walls or panels. The complete electrical system on the body will be protected by bolt-on type automatic reset circuit breakers.

(19) Supply and install a master switch in cab console to turn off and on all systems added by manufacturer. The Master switch shall be activated by the trucks ignition switch. The only 12 volt connections to the chassis will be a 12 volt supply cable from chassis battery to the master switch. Chassis manufactures recommend not shutting down the onboard computer.

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(20) Supply and install a loud sounding backup alarm (Ecco brand 97 db) wired to the chassis backup lights to signal when the vehicle is in reverse.

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**Bidder Comply**  
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### **Battery Charging System**

(21) Relocate the existing Kussmaul charger and outlet from the damaged chassis to the new glider kit.

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**Bidder Comply**  
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### **DOT lighting**

(22) Rear DOT lights will be Whelen 600 series; two (2) LED red stop & tail lights (60BTT), two (2) LED amber arrow turn signals (60A00TAR), two (2) LED clear backup lights (60C00VCR) with (2) four light chrome housing (PLAST4VL). There will also be one (1) chrome tag light and the necessary marker lights and reflectors.

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### **Ground lighting**

(23) Supply and install a total of six (6) LED Ground Lights. Two (2) LED lights shall be installed under the cab steps. Two (2) LED lights shall be installed under the forward area of the body. One (1) light shall be located on the driver's side and one (1) light located on the curb side. Two (2) LED lights shall be installed under the rear step. These lights shall automatically activate when the vehicle is in park or neutral.

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### **Deck Light – Flood**

(24) Supply and install two LED flood lights mounted at the front riser of the hose bed. The light shall have an "on-off" switch located on the pump panel.

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### **Back-Up Camera System**

- (25)
- A. Supply and install the following backup and curb side view system with two monitors, one in the cab and one at the driver's side pump panel. This system will include the following:
- One Digital STM5600 Monitor with 307K pixels
  - Four 66 ft. camera cables (shielded)

**Bidder Comply**  
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- Two 130 degree high performance color camera with heater.
  - One 5.6" (Waterproof) Digital LED backlit monitor (metal housing) with 15G vibration rating
  - Two "Y" adaptors for splitting camera cable to two monitors.
- B. There will be one camera at the rear of the body and one camera above the curb side pump panel.
- C. There will be one monitor in the cab of the chassis and one at the driver's side pump panel.
- D. There will be a switch at the pump panel in order for the operator to have the ability to switch from the rear camera to the curb side camera. If there is a need to switch the monitor in the cab to either the curb side or rear, the operator will push a button on the monitor.

### **Light & Siren Package**

(26) Emergency Warning Equipment includes the following:

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- A. Supply and install two (2) Whelen 900 series red Super-LED lights (90RR5FRR), with chrome trim (90FLANGC), mounted one in each side of grille.
- B. Supply and install two (2) Whelen 600 series red Super-LED lights (60R02FRR), with chrome trim (6EFLANGE), mounted one on each front fender of chassis.
- C. Supply and install four (2) Whelen 500 series red Super-LED lights (50R02FRR), with chrome trim (5EFLANGE), mounted two in each side of the body. One on the front door post and one on the rear door post.
- D. Supply and install two (2) Whelen 600 series red Super-LED lights (60R02FRR), with chrome trim, to be mounted on the rear panel at the rear of the body just above the DOT lights.
- E. Supply and install four (4) Whelen 600 series Super-LED Scene lights (6SC0ENZR) with chrome trim (6EFLANGE) to be mounted on the side top corners of the truck. These lights shall be controlled by a switch on the console.
- F. Supply and install two (2) Whelen 600 series Super-LED Scene lights (6SC0ENZR) with chrome trim (6EFLANGE) to be mounted on the rear of the truck. These lights shall be controlled by a switch on the console.
- G. Supply and install two (2) Whelen Beacon LED lights (L31HRF) at top rear of the truck. These shall be mounted on a Cast Products aluminum light stanchion bracket (LB0025-A & LB0025-B).
- H. Supply and install an LED Light Bar (Sound Off ELPL9000 S/N 2F365-001).

- I. One Able 2 eight way switch box with the first switch as a master switch for the remaining seven.
  - J. One Whelen 295SLSA1 control head mounted in the console.
  - K. One (1) 100 watt Cast Products speaker mounted in front bumper on the curb side.
  - L. Supply and install two (2) lights at the rear step board area.
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### **Console**

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(27) Supply and install a full console between driver's and passenger's seat for all emergency lights switch box, siren control box, relays, breakers, compartment door open light, etc. There will be a lift-up lid in order to gain access to breakers, control head wiring, etc. There will also be a one section open top container for clip boards, maps, etc. This console will be constructed of aluminum and will be painted with a black textured paint.

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### **UPF Poly Tank**

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- (28)
- A. If this unit has a Foam System, we would add a foam tank incorporated in the UPF tank. Tank capacity shall be approximately 1,500 gallons.

The bottom and sides shall be constructed of a minimum of 3/4" black UV stabilized copolymer polypropylene. The top shall be of 1/2" black UV stabilized copolymer material.

The tank shall have a combination vent and manual fill tower. The tank overflow shall be 6" diameter and shall dump behind the rear wheels to permit maximum traction. The tower shall have a hinged cover and screen.

Baffles, both longitudinal and latitudinal shall be interlocking and welded to minimize water surge during travel. Openings in the baffles shall allow water flow during filling or pumping operations. The tank shall be mounted on hard rubber cushions to isolate the tank from road shock and vibration. The tank shall be completely removable from the apparatus body structure.

The water tank shall have a 3.0" diameter clean out plug installed in the sump.

The fill tower on the tank shall be located at the curb side front of the top of the tank.

The water tank shall have a 1-1/2" diameter drain valve, controlled under apparatus.

This tank will have a special pass through sleeve of approximately 8" for the rear suction piping from the front of the tank to the rear of the tank. This sleeve will be to the curb side of the dump system.

There will also be two 4' special pass through sleeves for the two rear 2 1/2" discharge piping, complete with 2 1/2" piping from 2 1/2" valves on pump that will be installed through the pass through sleeves of the tank that will end with 2 1/2: NSTM chrome adaptor fittings and chrome cap and chain.

There will be two rear Firemen Friend adaptor fittings at the rear wall of the tank for the 2 1/2" tank fills. The exact location will be determined at time of application.

The front tank to pump connection will be 4" with the necessary UPF specified flex joints.

- B. Incorporated in the UPF poly tank will be a 15 gallon foam tank with all of the necessary outlets, vents, tower for the foam system, along with a level gauge point.

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### **2.5" Rear Water Tank Fills**

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(29)

- A. Supply and install two rear 2 1/2" tank fills. Both will have the stainless Fireman's Friend valve with 2 1/2" NPTF intake.
- B. Supply and install a 2 1/2" swivel connection with chrome cap and chrome turn downs on each tank fill.

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### **Tank Water Level Gauge**

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(30)

- A. Supply and install three (3) Hale Intelli-Tank 40 (ITL-40) water level gauges. One shall be located at the pump panel, one at the rear of the truck and one on the console.
  - B. Supply and install a foam level gauge at the driver's side pump panel.
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## **Electrically Operated Quick Dump**

(31)

- A. Supply and install a stainless steel Newton 10" electrically operated, quick dump valve constructed of stainless steel (1070-34) shall be provided. This dump system will have a stainless steel swivel that will allow water to be dumped at a 180 degree at the rear of the body side to side any angle within the 180 degrees. There will be a manually operated extension chute on the dump valve. The location will be the center rear of the apparatus.
- B. The 12 volt electric controls will be located at the driver's side rear of the body, and one set of controls shall be on the cab console. The controls shall have all the proper identification tags and lights. The controls are wired to the 12 volt system of the chassis with the necessary breakers and relays.

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(32)

- A. Supply and install a 5" rear suction with a MIV electric intake valve mounted at the pump and controls for this valve will be at the driver's side pump panel.
- B. Supply and install a 5" pipe from the pump back to the rear of the body, which will be installed in the pass through sleeve that will be incorporated in the tank. There will be a NSTM 5" end with a 5" chrome cap at the end of the pipe at the rear and a victaulic coupling connection at the MIV valve. This system will be to the curb side of the body and 10" Newton dump system.

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NOTE: The Newton dump system will may need to be located off center to the driver's side approximately 2" -6" in order to create enough space for this 5" rear suction.

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## **Pump & Plumbing**

(33) **123302 Rev.-**

## **QMax XS Side Mount Module Specification**

**Bidder Comply**  
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### **DETAILED SPECIFICATIONS**

#### **SPECIAL NOTE:**

When preparing the specifications for your new apparatus, assure the use of Hale® products by incorporating these specifications as written.



## **QMAX XS PUMP ASSEMBLY**

1. The pump shall be of size and design to mount on the chassis rails of a commercial and/ or custom truck chassis, and have the capacity of 1,500 gallons/ liters per minute as NFPA-1901 rated performance requirements.
2. The entire pump shall be assembled and tested at the pump manufacturer's factory.
3. The pump shall function by the utilization of a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.
4. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be tested at the pump manufacturer's facility to performance specifications as outlined by NFPA-1901 rated performance requirements. The pump shall be free from objectionable pulsation and vibration.
5. The pump body and related parts shall be constructed of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2,069 bar). All metal moving parts in contact with water shall be manufactured of high quality bronze or stainless steel. Any pump utilizing castings made of lower tensile strength cast iron not acceptable.
6. The pump body shall be horizontally split, on a single plane in two sections, for ease of removal of the impeller assembly. Wear rings and bearings associated with the pump body shall remove easily without disturbing the piping or mounting of the pump in chassis.
7. The pump body shall incorporate the discharge manifold system with a minimum of ten (10) 4" (10.16 cm) port and one (1) 3" (7.62 cm) ports.
8. The pump shall have one (1) double suction impeller. The pump body shall have two (2) opposed discharge volute cutwaters to eliminate radial unbalance.
9. The pump shaft shall be rigidly supported by three (3) bearings for minimum deflection. There shall be one (1) high lead bronze sleeve bearing to be located immediately adjacent to the impeller found on the side opposite of the gearbox. The sleeve bearing shall be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. (No exceptions.) The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.
10. The pump shaft shall have only one (1) packing gland located on the inlet side of the pump. The pump shaft shall be of split design for ease of repacking. The packing gland shall be manufactured of a full-circle threaded design to exert uniform pressure on packing and to prevent "cocking" and uneven packing load when it is tightened. (No exceptions.) The pump shaft shall be adjusted easily by hand with rod or screwdriver without special tools or wrenches required. The packing rings shall be of a unique, permanently lubricated, long-life graphic composition and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion. (No exceptions.) There is an optional mechanical seal in place of pump packing. There shall be only one (1) required on the suction (inboard) side of the pump. The mechanical seal must be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting.
11. The pump impeller shall have clearance rings manufactured of bronze, easy to remove, without replacing impeller or pump volute body. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.
12. The pump shaft shall be manufactured of heat-treated, electric furnace, corrosion resistant stainless steel for longer shaft life. The pump shaft shall be sealed with a double-lip oil seal to keep road dirt and water out of gearbox.

## **GEARBOX**

1. The pump gearbox shall be of sufficient size to withstand up to 16,000 lb/ft (7,257 kg/m) of drive through torque of the engine system. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.
2. The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4" (6.99 cm) in diameter, on both the input and output drive shafts. The drive shaft shall withstand the full torque of the engine.
3. All drive and pump gears shall be manufactured of the highest quality electric furnace chrome nickel steel. All bores shall be ground to size, teeth integrated and hardened, to create an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust. (There will be no exceptions.)
4. The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.
5. If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat-treated, hard anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.
6. All apparatus' built with automatic transmissions 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 position. The warning lights will be located as stated: two (2) in the truck driving compartment and one (1) on the pump operator's panel adjacent to the throttle control. For manual transmissions, one (1) green warning light will be provided for the driving compartment. All lights shall have appropriate identification/instruction plates.

## **CERTIFICATION**

The pump will perform and meet the following tests:

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.

Pump shall be tested at manufacturer under full NFPA suction conditions.

## **PRIMING PUMP**

The priming pump shall be a positive displacement, oil-less rotary vane electric motor driven pump conforming to NFPA-1901 rated performance requirements. The pump body shall be manufactured of heat-treated anodized aluminum for wear and corrosion resistance.

The pump shall be capable of producing a minimum of 24 Hg vacuum at 2,000 feet (609.6m) above sea level. The electric motor shall be a 12 VDC totally enclosed unit.

The priming pump shall not require lubrication. The priming pump shall operate by a single pull control valve mounted on the pump operator's panel. The control valve shall be manufactured of bronze construction.

## **6" STEAMER INLETS**

Two 6" (15.24cm) steamer inlets will be provided, one (1) on the left side and one (1) on the right side. Both inlets shall have long handle chrome vented caps and a screen.

## **RELIEF VALVE**

There shall be one (1) suction side stainless steel relief pump valve provided on the pump system.

### **PUMP MODULE BODY**

The pump module body shall be a self-supported structure mounted independently from the body and chassis cab. The pump module shall be constructed entirely of extrusions and aluminum plate. The framework shall be formed from beveled aluminum alloy extrusions and shall be electrically seam welded at each joint using 5356 aluminum alloy welding wire. The main framework to be 3.00 x 3.00 x 0.18, or 3.00 x 1.5 webbed 0.25, 6063-T5 aluminum extrusion. The pump module design must allow normal frame deflection through isolation mounts without imposing stress on the pump module structure or side running boards. The pump module shall consist of a welded framework, properly braced to withstand chassis frame flexing. The pump module support shall be bolted to the frame rails of the chassis.

### **PUMP MODULE PANELS**

The pump module panels shall be 14 gauge brushed stainless steel. The panels shall be an integral part of the module.

### **PUMP CERTIFICATION TEST PLATE**

A permanently affixed plate shall be installed at the pump operators position that will provide the rated discharge and pressures together with the speed of the engine as determined by the certification test for each unit, the position of the parallel/series pump used and the no load governed speed of the engine as stated by the engine manufacturer on a certified brake horsepower curve.

### **DISCHARGE VALVES**

The valves including the ball shall be constructed of 304 stainless steel. The valves shall be bi-directional with full flow capability. The valves shall be of fixed pivot ball design with a flow pressure rating to meet NFPA-1901 standards. The valve shall have a single piece seat and seal design and shall have an operating pressure of 400 psi. All 3.0" (7.62cm) discharge valves shall be supplied with a true slow close mechanism per NFPA specifications. The valve shall be warranted for a period of ten (10) years on all stainless steel components, against defects in design and manufacturing processes.

### **PIPING AND MANIFOLDS**

All the plumbing and/or piping in the pump module shall be of 304 stainless steel or flexible piping for long life. All stainless steel castings shall be a minimum of schedule 40. All NPT pipe thread connections larger than ¾" connections shall be avoided in the construction of the plumbing system. The following valves shall have groove connection: rear discharge, tank fill, all 2" and 2-½" (5.08 and 6.35cm) pre-connect valves.

The flexible piping shall be black SBR synthetic rubber hose with 300 working pounds and 1200 pounds burst pressure for sizes 1.5 through 4". Sizes ¾", 1" and 5" are rated at 250 pound working and 1000 pound burst pressure. All sizes are rated at 30 HG vacuum. Reinforcement consists of two plies of high tensile strength tire cord for all sizes and helix wire installed in sizes 1 through 5" for maximum performance in tight bend applications. The material has a temperature rating of -40 degrees F to 210 degrees F. Full flow couplings are precision machined from high tensile strength stainless steel. All female couplings are brass. ¾" and 1" male and Victaulic couplings are brass.

### **PUMP COOLER and ENGINE COOLER VALVES**

An engine cooler and pump cooler valve shall be installed in the instrument panel.

The valves shall be a 1/4" multi-turn valve installed thru the instrument panel and labeled.

### **MASTER PUMP DRAIN**

The pump shall be equipped with a Class 1 Master Pump drain to allow draining of the lower pump cavities, volute and selected water carrying lines and accessories. The drain shall have an all brass body with a stainless steel return spring.

### **U.L. TEST POINTS**

Two (2) U.L. test points shall be mounted on the pump panel for testing of the vacuum and pressures. The test points shall be a single piece with individual ports for suction and discharge.

### **VALVE CONTROLS**

Class 1 locking push pull control rods shall be provided for valve actuation. The chrome plated zinc handles shall have a recessed area for 1" x 3" (2.54 x 12.70cm) identification tags. The controls shall be locked in any position.

### **DISCHARGE GAUGES**

Individual Class 1 2-1/2" (6.35cm) line gauges for each 2" (5.08cm) or larger discharge shall be provided and mounted adjacent to the discharge valve control handle. The gauges shall indicate pressure from 0 to 400 PSI. The pressure gauge shall be fully filled with pulse and vibration dampening Interlube® to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature material and be sealed from the water system using an isolating Sub Z diaphragm located in the stem. A colored bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

### **INDIVIDUAL DRAINS**

All 2" (5.08cm) or larger discharge outlets shall be equipped with a 3/4" ball valve drain valve or larger.

### **WIRING HARNESS**

The Class 1 electrical wiring harness shall be manufactured using GXL wire as SAE- J1128 rated performance requirements. The electrical wiring harness shall be covered by a black split convoluted loom, rated at a minimum of 275° F. All terminals shall meet the minimum pull test as required by the manufacturers pull test and crimp measurement data. All splices shall be manufactured using the ultra-sonic splice process. The harness shall be 100% connected to a Dynalab® circuit tester to insure continuity and correct assembly.

### **LEFT SIDE FRONT DISCHARGE**

One (1) 2-1/2" (6.35cm) discharge with a stainless steel valve shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-1/2" (6.35cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2-1/2" (6.35cm) MNST threads. A chrome vented cap and chain shall also be supplied.

The valve shall be controlled at the side panel with a rack and sector control. There shall be a Class 1 2 ½" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn ¾" drain valve. The discharge must be capable of flowing 700 GPM or greater.

#### **LEFT SIDE AUXILIARY SUCTION**

One (1) 2-½" (6.35cm) intake with a stainless steel valve shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The valve shall be controlled at the side pump panel with a swing handle. The valve shall come equipped with a chrome plug, chain, inlet strainer, 2-½" (6.35 cm) NST chrome inlet swivel and ¾" drain valve.

#### **RIGHT SIDE FRONT DISCHARGE**

One (1) 3" (7.62cm) discharge with a stainless steel valve shall be located on the right side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 3" (7.62cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 3"(7.62cm) MNST threads. The valve shall be of the slow-close design so as not to allow the valve to open or close in less than 3 seconds. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel. There shall be a Class 1 2 ½" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn ¾" drain valve. The discharge must be capable of flowing 1500 GPM or greater.

#### **RIGHT SIDE REAR DISCHARGE**

One (1) 2-½" (6.35cm) discharge with a stainless steel valve shall be located on the right side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-½" (6.35cm) outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2-½" (6.35cm) MNST threads. A chrome vented cap and chain shall also be supplied. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel. There shall be a Class 1 2 ½" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn ¾" drain valve. The discharge must be capable of flowing 700 GPM or greater.

#### **RIGHT SIDE AUXILIARY SUCTION**

One (1) 2-½" (6.35cm) intake with a stainless steel valve shall be located on the right side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The valve shall be controlled at the side pump panel with a swing handle. The valve shall come equipped with a chrome plug, chain, inlet strainer, 2-½" (6.35 cm) NST chrome inlet swivel and ¾" drain valve.

#### **DECK GUN DISCHARGE**

One (1) 3" (7.62cm) discharge with a stainless steel valve shall be located on the top of the pump. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 3" (7.62cm) outlet shall be equipped with an integral, stainless steel flange terminating with 3"(7.62cm) Victaulic. The discharge shall be plumbed to the top of the module using 3" (7.62cm) schedule 10 stainless steel pipe. The pipe shall terminate in a 3" (7.62cm) MNPT thread. The pipe shall be held in place by a 2 piece stainless steel bracket. The valve shall be of the slow-close design so as not to allow the valve to open or

close in less than 3 seconds. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel. There shall be a Class 1 2 ½" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a ¾" automatic drain valve. The discharge must be capable of flowing 1500 GPM or greater.

#### **LEFT REAR DISCHARGE**

One (1) 2-½" (6.35cm) discharge with a stainless steel valve shall be plumbed to the left side rear. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-½"(6.35cm) valve outlet terminates with 2-½"(6.35cm) grooved connection. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel. There shall be a Class 1 2 ½" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn ¾" drain valve. The discharge must be capable of flowing 500 GPM or greater.

#### **TANK FILL**

One (1) 2-½" (6.35cm) discharge with a stainless steel valve shall be plumbed to the tank. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-½" (6.35cm) valve outlet terminates with 2-½" (6.35cm) grooved connection. Valve shall be controlled at the side panel with a chrome-plated push/pull locking "T" handle mounted on the pump panel.

#### **CROSSLAY 1 ¾" (2 each)**

Two double crosslay shall be installed on apparatus. Each section of the crosslay shall hold 200' of 1-3/4" double jacket fire hose. A 1-1/2" mechanical swivel hose connector shall be used in each crosslay to provide access of hose in either direction. Each crosslay shall have one (1) 2" (5.08cm) stainless steel valve. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2"(5.08cm) valve outlet terminates with 2"(5.08cm) grooved connection. The discharge shall be plumbed to the crosslay trays using 2" (5.08cm) schedule 10 stainless steel pipe. The pipe shall terminate in a stainless steel swivel with 1 ½" (3.81cm) NH thread. The swivel shall allow the hose to be pulled from either side of the apparatus. The pipe shall be held in place by a 2 piece stainless steel bracket. Each valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel. There shall be a Class 1 2 ½" pressure gauge mounted on the panel near each control to indicate pressure. Each discharge shall also come equipped with a quarter-turn ¾" drain valve. Each discharge shall be foam capable. Each discharge must be capable of flowing 180 GPM or greater.

#### **RIGHT REAR DISCHARGE**

One (1) 2-½" (6.35cm) discharge with a stainless steel valve shall be plumbed to the right side rear. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-½"(6.35cm) valve outlet terminates with 2-½"(6.35cm) grooved connection. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel. There shall be a Class 1 2 ½" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn ¾" drain valve. The discharge shall be foam capable. The discharge must be capable of flowing 500 GPM or greater.

#### **CROSSLAY 2 ½"**

One single crosslay shall be installed on apparatus. The section of the crosslay shall hold 200' of 2 ½" double jacket fire hose. A 2-1/2" stainless steel mechanical swivel hose connector shall be used in the crosslay to provide access of hose in either direction. The crosslay shall have one (1) 2-½" (6.35cm) stainless steel valve. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2-½" (6.35cm) valve outlet terminates with 2-½" (6.35cm) grooved connection. The discharge shall be plumbed to the crosslay trays using 2 ½" (6.35cm) schedule 10 stainless steel pipe. The pipe shall terminate in a stainless steel swivel with 2 ½" (6.35cm) NH thread. The swivel shall allow the hose to be pulled from either side of the apparatus. The valve shall be controlled with a chrome-plated push/pull locking "T" handle mounted on the pump panel. There shall be a Class 1 2 ½" pressure gauge mounted on the panel near the control to indicate pressure. The discharge shall also come equipped with a quarter-turn ¾" drain valve. The discharge shall be foam capable. The discharge must be capable of flowing 350 GPM or greater.

#### **TANK TO PUMP**

One (1) 4" (10.16cm) valve shall be installed between the water tank and the pump. The valve shall be a quarter turn ball type. The valve shall be actuated with an air cylinder. The valve shall be controlled with a switch at the pump panel.

#### **MASTER GAUGES**

Class 1 4-½ (11.43cm) gauges shall be provided. The master discharge gauge shall indicate pressure from 0 to 600 PSI. The master intake gauge shall indicate pressure from -30hg to 600 PSI. The gauges shall be Interlube filled pressure gauges and handle pressures from 0 to 400 PSI. The pressure gauge shall be fully filled with pulse and vibration dampening Interlube® to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to minus 40 degrees F. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and Bourdon tube shall be filled with low temperature material and be sealed from the water system using an isolating Sub Z diaphragm located in the stem.

#### **TOTAL PRESSURE GOVERNOR (TPG)**

Apparatus shall be equipped with a Class 1 "Total Pressure Governor" (TPG) that is connected to the Electronic Control Module (ECM) mounted on the engine. The "TPG" will operate as a pressure sensor (regulating) governor (PSG) utilizing the engine's J1939 datalink for optimal resolution and response provided that J1939 is supported by the engine manufacturer. If J-1939 engine control is not supported, then analog remote throttle control shall be provided by the TPG, subject to J1939 RPM data availability.

The TPG shall utilize control algorithms that minimize pressure spikes during low or erratic water supply situations and display operational status messages to the operator under certain circumstances. The TPG shall be backwards compatible to any engine that supplies J1939 RPM, Temperature and Oil Pressure information providing the ability to maintain consistent fleet fire-fighting capability. TPG shall incorporate the ability to use either a 300 PSI or a 600 PSI transducer for best operation. PSG system diagnostics shall be built in and accessible by service technicians.

Programmable presets for RPM and Pressure settings shall be easily configurable. The TPG shall incorporate configurable parameters in the menu structure accessed through a diagnostic password.

The "TPG" shall also include indication of engine RPM, system voltage, engine oil pressure and engine temperature with audible alarm output for all. The "TPG"

uses the J1939 data bus for engine information, requiring no additional sensors to be installed.  
The TPG shall use J1939 broadcast warnings for the alarm points as a standard.

#### **ITL-40 TANK LEVEL GAUGE**

The apparatus shall be equipped with a Class1 "ITL-40" Tank Level Gauge for indicating water or foam level. The Tank Level Gauge shall indicate the liquid level or volume on an easy to read LED display and show increments of 1/8 of a tank.

Each tank level gauge system shall include:

- 1) A pressure transducer that is mounted on the outside of the tank in an easily accessible area. Sealed foam tanks will require zero pressure vacuum vents.
- 2) A super bright LED display viewable from 180 degrees with a visual indication at nine accurate levels.
- 3) A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power. Additional (slave) displays (if requested) are to be easily integrated and will receive data from the same source as the Master Display. No additional transducers shall be required.
- 4) The system shall include the ability to display "text messages"
- 5) The system shall include built-in diagnostic capabilities.

#### **TRV-L**

A thermal protection device shall be included on the pump that monitors pump water temperature and opens to relieve water to cool the pump. The thermal protection device shall be set to relieve water when the temperature of the pump water exceeds 120o F (49 C). The components of the thermal protection device shall be manufactured of brass and stainless steel and be compatible with most foam concentrates. The thermal protection device shall have 1-1/4 inch NPT threads for easy adaptability to existing pump discharge openings. The discharge line shall be 3/8 inch diameter tubing vented to atmosphere or back to the booster tank. The thermal protection device shall have a hydrostatic test rating of 600 PSIG.

#### **ANODES (3 each)**

The Fire Pump shall be equipped with replaceable anodes. The pump shall have one anode on each intake section and one anode on the discharge section of the Fire Pump.

#### **MASTER INTAKE VALVE (MIV)**

**(3 each – (1) rear suction, (1) P/S (right side) pump suction & (1) D/S (left side) pump suction)**

Electric master intake valves shall be installed on the left hand side steamer inlet, left hand bottom steamer inlet, right hand side steamer inlet, the right hand bottom steamer inlet and the right hand rear (T port) inlet. The valves shall meet the following criteria:

1. The inlet valve shall be a full flow butterfly type valve designed to mount on the fire pump between the suction tube extension and suction tube behind the pump compartment panel. The valve shall not interfere with other suction or discharge openings on the fire pump or with pump operating controls when properly mounted.
2. The entire valve shall be manufactured and tested at the pump manufacturers' factory.
3. When the valve is installed in the fire pump suction the fire pump shall be capable of achieving an NFPA / UL test rating of 1500 GPM through a single 6 inch NST suction hose. When two valves are installed on the fire pump,



the pump shall be capable of achieving an NFPA/UL test rating of 2000 GPM using dual 6 inch NST suction hoses.

4. The valve body and related components that are in contact with water shall be manufactured of fine grained corrosion resistant bronze.
5. The butterfly disc shall be manufactured from 80,000 PSI minimum yield strength heat treated cast steel then coated with a durable nitrile rubber to provide a positive seal when the valve is closed.
6. Testing and rating of the valve shall be accomplished at the valve manufacturers factory. The valve, less relief valve, shall be hydrostatically tested to 600 PSIG. The valve shall then be vacuum tested to 26 inches Hg.
7. A pressure relief valve shall be provided that is factory set to 125 PSI and field adjustable from 75 to 250 PSI. The pressure relief valve shall provide overpressure protection for the suction hose even when the intake valve is closed. An integral relief valve mounting pad shall be provided on the valve body. This mounting pad shall provide a Hale type 115 4-3/8 inch bolt circle flange for normal installation. The mounting pad shall have 2-1/2 inch female NPT threads to permit remote mounting of the relief valve without special adapters. The outlet of the pressure relief valve shall have 2-1/2 inch NPT threads to allow directing the discharge flow away from the pump operator position.
8. The inlet valve(s) shall be operated by a 12 VDC electric motor with remote capabilities or by a manual handwheel located next to the suction tube.
9. Each valve shall be provided with panel placards indicating control operation. The placards shall have status lights to indicate whether the valve is open, closed or traversing from one position to another.
10. Each valve shall be provided with a gear actuator that will cycle the valve from OPEN to CLOSED position in no less than 3 seconds. The gear actuators shall be sealed units designed to provide reliable service in the harsh pump compartment environment. The ratio of the gear actuator shall be such that the handwheel will close the valve in no more than 10 complete turns.
11. The 12 VDC motor on the electric operated valve shall be provided with an automatic resetting, thermally compensated, over current protection circuit breaker to protect the 12 VDC motor and apparatus electrical systems.
12. The electrical wiring for the valve shall be minimum 14 AWG, type SXL or GXL (SAE J1128) and shall be protected using 257 F minimum flame retardant, moisture resistant loom or braid. All electrical connections shall use sealed Packard Weather Pack connectors to provide extra protection from the harsh pump compartment environment to ensure long life and reliable operation.
13. The valve body shall have a 3/4 inch female NPT threaded port on the top to allow installation of an NFPA compliant large diameter hose air bleeder valve. The air bleeder valve shall be mounted on the operator panel and be controllable by the pump operator. Air bleeder valve connections shall have a restriction no larger than 3/4 inch to prevent water hammer when filling hose.
14. The valve body shall have a 1/4 inch female NPT threaded port on the bottom to permit connection of an individual water drain valve.
15. A suction tube extension 7-1/4 inches wide shall be used to allow for the additional length of the inlet valve. The shorter suction tube extension, along with a 4, 6 or 9 inch suction tube, will keep the suction tube threads within the apparatus running boards while maintaining clearance for adapters.
16. A panel mounted manual override shall be provided to permit operation of the electric remote control valve in the event of abnormal operating conditions. The manual override shall be designed to permit operation of the valve without the use of special tools or disassembly of the pump compartment panel or valve.

17. The valve shall be equipped with o-ring seals for the mounting flanges. The o-ring seal groove shall be sized for proper squeeze of the o-ring for pressures in excess of 600 PSIG.

**FOAMLOGIX 2.1-A FOAM CONCENTRATE PROPORTIONING SYSTEM**

The apparatus shall be equipped with a FoamLogix automatic electronically controlled, direct injection, discharge side foam proportioning system. Foam proportioning operation shall be based on direct measurement of water flow, and remain consistent within the specified flows and pressures.

A DC powered variable-speed electronic direct-injection foam-concentrate proportioning system with a 2.1-gpm-foam concentrate pump shall be integrated into the apparatus to provide foam proportioning. The pump shall be capable of handling Class A foam concentrate only and be operated by a full-function panel mounted digital display.

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**Drop Tank Compartment**

(34) Supply and install Drop Tank compartment complete with a Ziamatic “Quick Lift” Hydraulic Portable Drop Tank Lift System. This shall be installed on top of the curb side compartments. There shall be an aluminum tread plate exterior cover to hold and protect the drop tank when stored. This compartment shall hold a 1500 gallon drop tank. Controls shall be mounted at the rear of the apparatus.

**Bidder Comply**  
Y\_\_\_ N\_\_\_

This system will be connected to the 12 volt system of the chassis with the necessary sized breakers and/or relays.

(35) Supply a 1500 gallon Fol-da-Tank (FTDA-1500-ALUM) portable drop tank with 30 oz. vinyl.

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**Suction Tube Rack**

- (36)
- A. Supply and install two (2) hard suction hose storage compartments that will be mounted on top of the drop tank Ziamatic Lift System. These compartments will be fabricated from 1/8” thick ATP materials and will have the necessary containment straps. The two sections of 6” hard hose will be able to be deployed when the drop tank Ziamatic system is in the down and deployed position.
  - B. Supply two (2) 10’x 6” sections of light weight suction hose.

**Bidder Comply**  
Y\_\_\_ N\_\_\_

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## **Air Bottle & Pike Pole Storage**

(37) Supply and install four spare air bottle storage compartments, two in front section and two in rear section of each rear wheel opening panels. These will have round aluminum tubes with Cast Product aluminum doors. All four tubes will have a rubber stick on mat in the bottom of the tube.

**Bidder Comply**  
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(38)

- A. Supply and install two pike pole storage compartments that will mount on top of the driver's side high side compartment. This will be fabricated from 1/8" thick ATP materials and will be enclosed with one access door at the rear. This will be able to store one 10 ft. and one 6 ft. pike pole.
- B. Supply and install one 6 ft. pike pole (part# FLA-PP06) and one 10 ft. pike pole (part# FLA-PP10).

**Bidder Comply**  
Y\_\_\_ N\_\_\_

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### **Option 1**

Supply and install one Elkhart Deluge gun (part #08297252) Model #8297 including gun, tips and ground base with 2" – 2 ½" discharge along with a 8298-P model (part# 08298100) truck mount base.

### **Option 2**

Pull out trays mounting in the floor of a compartment complete with a gas shock operator to hold tray in place while in the stored and deployed positions.

### **Option 3**

Adjustable height pullout trays in any compartment complete with four adjustable aluminum tracks and gas shock operators to hold tray in place while in the stored and deployed positions.