# Low Hose Bed FB-94 Pumper/SM

Fouts Bros.

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## SCOPE AND GENERAL REQUIREMENTS

It is the intent of the manufacturer to provide a new fire apparatus that will withstand the continuous use encountered in the emergency fire fighting service. The apparatus shall be of the latest type, symmetrically proportioned and constructed with due consideration of the load to be sustained.

All parts not specifically mentioned herein, but which are necessary in order to furnish a complete fire apparatus, shall be furnished and shall conform to the best practices known to the fire apparatus industry.

The unit is to be of current year manufacture, and is to be new and unused. The bid price shall not include any local, State, or Federal taxes. The Bidder shall not be liable for any State or Federally mandated tax or program after the sale of this apparatus.

These specifications shall be construed as minimum. Should the manufacturer's current published data or specifications exceed these, they shall be considered minimum and be furnished.

**PRIME BIDDER, MANUFACTURER**

The manufacturer shall be prime bidder and shall identify the location of their facility.

**BIDDERS BACKGROUND**

Bids are requested from responsible manufacturers who are engaged in the manufacture of fire apparatus. To insure reliable and complete acceptance of the apparatus, bidder shall have been in operation for a minimum of thirty (30) years in the manufacturing of fire apparatus.

The manufacturer of the apparatus must be fully owned and managed by a Parent Company, Corporation, or Individual(s) that is 100% held by United States of America based Company, Corporation, or United States citizen(s).

Proposals from any manufacturer that is fully or partially owned and/or operated by a foreign company, Corporation or Individual(s) under any type of ownership, partnership, or any similar type of agreement will be immediately rejected.

If the manufacturer of the apparatus, or if any owner, shareholder, or immediate relative of an owner or shareholder that has previously been involved in or held ownership in any company that has filed bankruptcy or any other type of reorganization plan, it must be clearly stated in the bid proposal. The statement must include details and dates of all occurrences.

**FAMA COMPLIANCE**

The apparatus manufacturer must be a current member of the Fire Apparatus Manufacturer's Association (FAMA) and must provide certificate of membership.

**FAIR, ETHICAL AND LEGAL COMPETITION**

In order to ensure fair, ethical, and legal competition the apparatus manufacturer shall have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

**PROPRIETARY PARTS**

It is the intention of the purchaser for all bidders to furnish the apparatus with major parts commonly used by the heavy-duty truck manufacturers and open market vendors whereas replacement parts are more readily available and at reduced cost. The use of proprietary parts may not be acceptable to the purchaser.

**MANUFACTURER'S DISCRETION**

Materials, parts, or procedures used are subject to change at manufacturer's discretion at any time to provide equal or better products.

**MANUFACTURING LOCATION**

The apparatus shall be manufactured in Milledgeville, Georgia.

**PRODUCT QUALITY AND WORKMANSHIP**

The components provided and workmanship performed shall be of the highest quality available for this application. Special consideration shall be given to the following areas:

1. Accessibility to various components that require periodic maintenance or lubrication checks.
2. Ease of vehicle and pump operation.
3. Features beneficial to the intended operation of the apparatus.

Construction of the complete apparatus shall be designed to carry the loads intended to meet the road and terrain conditions and speed requirements desired when specified by the purchaser.

Welding shall not be employed in the assembly of the apparatus in a manner that will prevent the removal of any major component part for service and/or repair.

**INSURANCE REQUIREMENTS**

Each bidder must submit with their bid proposal a Certificate of Insurance listing the proposed manufacturer's product liability insurance coverage. Liability insurance shall be a minimum amount of ten (10) million dollars. Submitted certificate shall name the apparatus manufacturer, insurance company, policy number, and effective dates of the insurance policy. Bids submitted without the required certificate will be considered nonresponsive and automatically rejected. No exceptions are allowed to the minimum insurance coverage requirement.

The manufacturer shall maintain full insurance coverage on the purchaser's cab and chassis from time of first possession by the manufacturer until the apparatus is delivered and accepted by the purchaser (No Exceptions). Purchaser reserves the right to require proof of insurance from the manufacturer's insurance carrier prior to entering into a contract for the apparatus.

**PAYMENT TERMS**

Full payment for the apparatus shall be made at time of delivery of the completed vehicle. Due to insurance liability, the apparatus will not be left at the purchaser's location without full acceptance and payment or prior agreement between the Purchaser and Bidder.

Final delivery price shall not include any Local, State or Federal taxes. The manufacturer shall not be liable for any State or Federal mandated tax or program after sale or delivery of the apparatus.

**DELIVERY REQUIREMENTS**

Delivery of the completed vehicle shall be no more than 120 calendar days after delivery of the chassis to the apparatus manufacturer.

**VEHICLE ACCEPTANCE AND DELIVERY**

The customer shall pickup the vehicle at the manufacturing facility and shall supply evidence of sufficient insurance coverage to transport the vehicle.

**FUEL TANK FILLED AT DELIVERY**

The fuel tank and DEF tank (if applicable) shall be filled upon final delivery at the factory.

**OVERALL HEIGHT**

An overall height restriction has not been specified for this apparatus.

**OVERALL LENGTH**

No overall length restriction has been specified for this apparatus.

**OVERALL WIDTH**

No overall width restriction has been specified for this apparatus.

**OVERALL WHEELBASE**

No overall wheelbase restriction has been specified for this apparatus.

**PUMP MODULE WIDTH**

No pump module width restriction has been specified for this apparatus.

**ANGLE OF APPROACH**

No angle of approach restriction has been specified for this apparatus.

**ANGLE OF DEPARTURE**

No angle of departure restriction has been specified for this apparatus.

**NFPA 1901 COMPLIANCE**

The National Fire Protection Association standard #1901 (most recent edition) is hereby adopted and made a part of these specifications, the same as if they were written out in full detail, insofar as they apply with the exception of any sections dealing with “Equipment Recommended for Various Types of Apparatus”. Bidders are to provide only the equipment requested herein and the Department will supply the rest before the apparatus is put into service. The unit shall comply with all federal, state, ICC, and DOT motor vehicle regulations, standards, and laws relating to commercial vehicles as well as to fire apparatus on the date of the bid.

**ROAD TEST CERTIFICATION**

A road test shall be conducted with the finished apparatus fully loaded. During this time, the apparatus shall not show loss of power and/or overheating. The transmission driveshaft or shafts and rear axle shall run free from abnormal vibration or noise throughout the operating range of the apparatus. The apparatus, when loaded, shall have not less than 25% or more than 45% of the weight on the front axle and not less than 55% or more than 75% on the rear axle.

1. The apparatus must be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed RPM of the engine.
2. The apparatus must be capable of accelerating from a steady speed of 15 mph to a true speed of 35 mph within 30 seconds. This shall be accomplished without moving the gear selector.
3. The fully loaded apparatus shall be capable of obtaining a speed of 50 to 55 mph on a level concrete highway.
4. The manufacturer shall furnish copies of the engine installation approvals signed by the appropriate engine company upon delivery of the chassis to the Fire Department.
5. The manufacturer shall furnish copies of the transmission approval signed by the transmission manufacturer upon delivery of the chassis to the Fire Department.
6. The manufacturer shall furnish copies of the front and rear axle approvals upon delivery of the apparatus to the Fire Department.

**ROAD TEST FAILURE**

In the event the apparatus fails to meet the test requirements of these specifications on the first trials, second trials may be made at the option of the manufacturer within thirty (30) days of the first trials. Such trials shall be final and conclusive and failure to comply with changes, as the purchaser may consider necessary to conform to any clause of the specifications within thirty (30) days after notice is given to the manufacturer of such changes, shall be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser, or its use by the purchaser during the above-specified period with permission of the manufacturer, shall not constitute acceptance.

**VEHICLE TOP SPEED**

The rear axle shall be geared for a top speed of 65 to 68 mph at engine governed RPM.

**NFPA TOP SPEED STATEMENT**

NFPA-1901, 2009 Edition - 4.15.2. The maximum top speed of fire apparatus with a GVWR over 26,000 lbs. shall not exceed either 68 MPH or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower. NFPA-1901, 2009 Edition - 4.15.3. If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gallons, or the GVWR of the vehicle is over 50,000 lbs., the maximum top speed of the apparatus shall not exceed either 60 MPH or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

**SAFETY SIGNS**

The following safety signs shall be provided:

**SEATED AND BELTED WARNING LABEL - FAMA# 07**

A permanent label shall be provided that is visible to all occupants that states that they should be seated and belted while the apparatus is in motion. The label shall also state potential injuries or death that

could be caused if the safety belts are not used properly.

**CAB INTERIOR EQUIPMENT MOUNTING DANGER LABEL - FAMA# 10**

A permanent label shall be provided inside of the cab warning of the dangers of unsecured equipment inside the cab. The label shall state that all equipment shall be properly secured and also warn of potential injury or death that could be caused by failing to do so.

**DO NOT WEAR HELMET LABEL - FAMA# 15**

A permanent label shall be provided inside of the cab in view of all seated positions stating that helmets should not be worn in cab. The label shall also warn of potential injury or death that could be caused by wearing helmet in cab.

V**EHICLE BACKING LABEL - FAMA17**

A permanent label shall be provided inside of the cab in view of the driver advising of proper procedures to following when the apparatus is in reverse motion. The label shall also warn of potential injury or death that be caused by failing to follow proper procedures.

- “Do Not Move Apparatus When Light Is On” sign adjacent to the warning light indicating a hazard if the apparatus is moved (as described in subsequent section).

**CHASSIS DATA LABELS**

The following information shall be on labels affixed to the vehicle:

**Fluid Data:**

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid
- Pump primer fluid (if applicable)
- Drive axle(s) lubrication fluid
- Air conditioning refrigerant
- Air conditioning lubrication
- Power steering fluid
- Transfer case fluid
- Equipment rack fluid (if applicable)
- Air compressor system lubricant
- Generator system lubricant (if applicable)

**Chassis Data:**

- Chassis Manufacturer
- Production Number
- Year Built
- Month Manufactured
- Vehicle Identification Number

Location shall be in the driver's compartment of the chassis cab.

**OVERALL HEIGHT, LENGTH, GVW DATA PLAQUE**

A "high visibility" plate shall be permanently mounted in the cab, visible to driver when seated.

The plate shall show the overall height of the completed apparatus in feet and inches, the overall length of the completed apparatus in feet and inches.

The plate shall also show the gross vehicle weight rating (GVWR) in tons.

Text shall also be supplied on the plate, indicating that the information shown is current upon completion of the apparatus. If the overall height of the apparatus changes after the apparatus is put into service, then the purchaser must revise the dimensions on the plate.

**"NO RIDE" LABEL**

A label shall be located on the vehicle at the rear step areas, and at any cross walkways, if they exist. The label(s) shall warn personnel that riding in or on these areas while the vehicle is in motion is prohibited.

**FAMA SAFETY GUIDE**

One (1) copy of the latest edition of FAMA's Fire Apparatus Safety Guide shall be provided with the completed apparatus.

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## CUSTOM CHASSIS SPECIFICATION

**CHASSIS PROVIDER**

The Spartan chassis, as detailed in the attached specifications, shall be ordered and supplied by the apparatus manufacturer.

**HUB COVERS - FRONT**

Stainless steel hub covers shall be provided on the front axle.

**HUB COVERS - REAR**

A pair of stainless steel high hat hub covers shall be provided on rear axle hubs.

**COVERS, LUG NUT, CHROME**

Chrome lug nut covers shall be supplied on front and rear wheels.

**EXHAUST SYSTEM**

The chassis exhaust system shall be left as it comes from the chassis OEM, no modifications shall be made by the apparatus manufacturer.

**HOT EXHAUST DANGERS LABEL - FAMA 04**

A permanent label shall be provided near any hot exhaust surface that warns of potential injury or death that could be caused by contact with the surface. The label shall also state precautions that should be taken while working on or around the surface.

**BUMPER**

The chassis bumper shall be left as it comes from the chassis OEM, no modifications shall be made by the apparatus manufacturer.

**DRY-MAT - CHASSIS SUPLLIED FRONT BUMPER COMPARTMENT**

The front bumper compartment shall contain turtle tile, dry-mat flooring to allow for hose to dry.

The turtle tile shall be black in color.

**REAR MUD FLAPS**

A pair of black rubber mud flaps, with the Manufacturer's logo, shall be provided and installed behind the rear wheels.

**CAB LIFT CONTROL LOCATION**

The cab lift controls for tilting the cab shall be recess mounted in the right hand side pump panel.

**DUAL USB PORT**

One (1) Kussmaul model 091-219-5 shall be installed in the console. It shall contain two (2) 2.4 amp USB charging ports.

## PUMP, MODULE, AND RELATED ITEMS

**NFPA 1901 COMPLIANT PUMP**

The fire pump and related plumbing on the specified apparatus shall be installed in accordance with applicable NFPA 1901 guidelines at the time the contract was placed.

**HALE QMAX PUMP ASSEMBLY**

The pump shall be of a size and design to mount on the chassis rails of commercial and custom truck chassis.

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

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

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 spots as

outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectionable pulsation and vibration.

The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2069 bar). All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

Pump body shall be horizontally split, on a single plane in two (2) sections for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump in chassis.

The pump body shall extend as one piece across the truck chassis from side mounting to side mounting and incorporate the discharge manifolding system with a minimum of (2) 4” ports and (7) 3” ports.

The pump shall have one (1) double suction impeller. The pump body shall have two opposed discharge volute cutwaters to eliminate radial unbalance. (No exceptions)

Pump shaft to be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing to be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to 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.

Pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency. (No exceptions.)

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

**ELECTRONIC PUMP MANUALS**

Two (2) sets of electronic fire pump service and operation manuals shall be provided with the completed apparatus.

**PUMP WARRANTY**

The pump shall be covered by the Hale Pro-Tech 5-year pump warranty against workmanship and materials. Both parts and labor shall be covered for the first 2 years and years 3-5 shall have parts only coverage.

**GEARBOX**

Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. 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.

The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.

All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give 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. (No exceptions.)

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

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.

**MECHANICAL SEAL**

The pump shall have a mechanical seal. One (1) only required on the suction (inboard) side of the pump. The mechanical seal shall be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber cup, and a tungsten carbide seat with Teflon backup seal.

**1500 GPM FIRE PUMP SPECIFICATIONS**

The centrifugal type fire pump shall be a Hale model QMAX midship mounted with a rated capacity of 1500 GPM. The pump shall meet NFPA 1901 requirements.

The pump shall be certified to meet the following deliveries:

- 1500 gpm (5678 L/M) @ 150 psi (10.3 bar)
- 1050 gpm (3974 L/M) @ 200 psi (13.8 bar)
- 750 gpm (2839 L/M) @ 250 psi (17.2 bar)

**MIDSHIP PUMP RATIO**

The ratio for the midship pump shall be 2.32:1 (23).

**LEFT SIDE INLET - 6.00"**

One (1) 6.00" steamer inlet with male NST threads shall be provided on the left side of the pump module. The inlet shall have a removable screen.

**INLET CAP**

One (1) 6.00" chrome plated cap with long handles and NST threads shall be supplied. The cap shall be capable of withstanding 500 PSI and be trimmed with the apparatus manufacturer's logo in the center of the cap.

**RIGHT SIDE INLET - 6.00"**

One (1) 6.00" steamer inlet with male NST threads shall be provided on the right side of the pump module. The inlet shall have a removable screen.

**INLET CAP**

One (1) 6.00" chrome plated cap with long handles and NST threads shall be supplied. The cap shall be capable of withstanding 500 PSI and be trimmed with the apparatus manufacturer's logo in the center of the cap.

**FIRE PUMP SPLIT SHAFT DRIVESHAFTS AND INSTALLATION**

The mid-ship split shaft fire pump shall be installed and shall include installation of the fire pump, modification and/or fabrication of new drivelines and all pump-mounting brackets.

**PUMP DRIVELINE**

The pump transmission driveline shall be supplied with 1710 series yokes and bearings to match the cab chassis driveline.

**TRANSMISSION LOCK-UP DEVICE**

The automatic chassis transmission shall be delivered to the body builder with high gear lock up device installed on the automatic transmission, to allow proper gear ratio for pump operation. The transmission shall be programmed by the chassis manufacturer to include this feature.

**PUMP SHIFT CONTROLS**

The pump shift controls shall be supplied with the custom chassis.

**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 0.75” connections shall be avoided in the construction of the plumbing system. The following valves shall have groove connection: rear discharge, tank fill, all 2.00” and 2.50” pre-connect valves.

The flexible piping shall be black SBR synthetic rubber hose with 300 working pounds and 1200 pounds burst pressure for sizes 1.50 through 4.00”. Sizes 0.75”, 1.00” and 5.00” 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 sand helix wire installed in sizes 1 through 5.00” 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. 0.75” and 1.00” male and Victaulic couplings are brass.

**INDIVIDUAL DRAINS**

All 2.00” or larger discharge outlets shall be equipped with a 0.75” ball valve drain valve or larger.

**HOSE THREADS- NST**

All hose threads shall be National Standard Thread (NST) on all base threads on the apparatus intake and discharges, unless otherwise specified.

**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 plugs 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.

**VALVES**

The valves shall be Akron Brass 8800 series with stainless balls. 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-1900 standards. All 3.00” discharge valves shall be supplied with a true slow close mechanism per NFPA specifications.

**INDIVIDUAL DRAINS**

One (1) individual Class1 quarter-turn up drain valve shall be furnished for each 1.50" or larger discharge port and each 2.50" gated auxiliary suction.

**DISCHARGE GAUGES**

Individual Class 1 2.50" line gauges for each 2.00” 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.

**PUMP CERTIFICATION**

The fire pump shall be tested to meet the flow requirements of the pump. A written certification shall be provided with the completed vehicle.

**RELIEF VALVE**

There shall be one (1) suction side stainless steel relief pump valve provided on the pump system. The valve shall be configured with a 2.50" male NST discharge outlet.

**FIRE PUMP PRIMING SYSTEM**

A Trident model 31.001.2 air operated priming system shall be installed. The unit shall be of all brass and stainless steel construction and designed for fire pumps of 1,250 GPM (4,600 LPM) or more. The primer shall be three-barrel design with direct connection to the Hale fire pump. The primer shall automatically drain when the panel control actuator is not in operation. The connection to the pump shall have an integral Hale strainer.

The priming system shall be capable to a vertical lift to 22.00" of mercury and shall be fully compliant to applicable NFPA standards for vertical lift. The system shall create vacuum by using air from the chassis air brake system through a three-barrel multi-stage internal “venturi nozzles” within the primer body.

The primer control shall have a manually operated, panel mounted “push to prime” air valve; which will direct air pressure from the air brake storage tank to the primer body. To prevent freezing, no water shall

flow to and from the panel control.

**THERMAL RELIEF VALVE**

A Hale Model TRV120 Thermal Relief Valve shall be provided on the pump. If water temperature in the pump exceeds 120 degrees Fahrenheit, the thermal relief valve shall automatically open and discharge pump water to the ground, through a 0.375" discharge line, routed below the pump module. The thermal relief valve shall automatically close when the water temperature is lowered.

**PUMP COOLING/BYPASS LINE**

A 0.25" pump cooling/bypass line shall be provided from the pump discharge manifold directly into the tank. The valve shall be a 0.25" multi-turn valve installed thru the instrument panel and labeled.

**SUPPLEMENTARY HEAT EXCHANGER COOLING SYSTEM**

The apparatus manufacturer shall install a heat exchanger for supplementary engine cooling during fire pump operations. A valve mounted at the operator's panel shall open a fire pump water line allowing cooling water to the heat exchanger that is mounted in the engine radiator cooling hose. The exchanger will allow cooling water from the fire pump to circulate around the engine radiator coolant without mixing or coming in direct contact with the engine coolant. A label shall identify the valve and indicate the direction of opening and closing.

**ANODES**

The fire pump shall be equipped with replaceable alloy anodes. The pump shall have one (1) anode on each intake section and one (1) anode on the discharge section of the fire pump, for a total of three (3).

**PRESSURE GOVERNOR and ENGINE MONITORING DISPLAY**

Fire Research PumpBoss Max series PBA501-D00 pressure governor and control module kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control knob shall be 2" in diameter with no mechanical stops, have a serrated grip, and a red idle push button in the center. It shall not extend more than 2" from the front of the control module. The control LCD shall be 3.5” in size with a minimum brightness of 1000 nits and optically bonded to 3mm Borofloat Glass. Inputs for monitored engine information shall be from a J1939 data bus or independent sensors. Outputs for engine control shall be on the J1939 data bus. Inputs from the pump discharge and intake pressure sensors shall be electrical.

The following continuous displays shall be provided:

- Engine RPM; shown on LCD screen
- Check engine and stop engine warning; shown on LCD screen
- Engine oil pressure; shown on LCD screen
- Engine coolant temperature; shown on LCD screen
- Transmission Temperature; shown on LCD screen
- Battery voltage; shown on LCD screen
- Pressure and RPM operating mode LEDs
- Pressure / RPM setting; shown on LCD screen
- Throttle ready / Ok to Pump LEDs.

On screen (LCD) message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. LCD Screen and LED's intensity shall be automatically adjusted for day and nighttime operation.

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response (visual alarm only).

The program features shall be accessed via push buttons located on the front of the control module. There shall be a USB port located at the rear of the control module to upload future firmware enhancements.

The pressure governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A throttle ready and Ok to Pump LED shall light when the interlock signal is recognized. The pressure governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the pressure governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The pressure governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of low water and no water conditions with an automatic programmed response and a push button to return the engine to idle.

The pressure governor control module shall be programmed at installation for a specific engine.

**LEFT SIDE FORWARD AUXILIARY INTAKE**

One (1) 2.50" gated suction intake shall be installed on the left hand side pump panel in the forward position to supply the fire pump from an external water supply. The intake shall have a 2.50" chrome plated female NST swivel connection with screen.
An Akron Brass 2.50" generation II swing-out valve shall be provided for the left hand side auxiliary suction.
The side auxiliary inlet will incorporate a quarter-turn ball valve with a swing-type manual control located adjacent the intake.
The intake shall also come equipped with a quarter-turn 0.75" drain valve and a matching color coded bezel.
One (1) 2.50" chrome plated plug shall be provided. The plug shall be equipped with MNST threads, rocker lugs, and chain.

**TANK TO PUMP LINE**

One (1) 3.00" tank to pump line shall be provided for connection between the water tank and the fire pump.
An Akron Brass 3.00" generation II swing-out valve shall be provided for the tank to pump line.

The quarter turn valve shall be manually operated with a Class1 locking push pull control rod.

**TANK FILL/RECIRCULATION LINE**

One (1) 2.00" fire pump to water tank refill and pump bypass cooler line shall be provided.

An Akron Brass 2.00" generation II swing-out valve shall be provided for the tank fill line.

The quarter turn valve shall be manually operated with a Class1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00” x 3.00” identification tag. The controls shall be locked in any position.

**LEFT SIDE FRONT PANEL DISCHARGE**

One (1) 2.50" discharge with valve shall be located on the left side panel.

An Akron Brass 2.50" generation II swing-out valve shall be provided for the discharge.

The quarter turn valve shall be manually operated with a swing handle from the left hand side pump operator's panel.

The discharge shall also come equipped with a quarter-turn 0.75" drain valve and a matching color coded bezel.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters
The discharge shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2.50" MNST threads.

One (1) 2.50" chrome plated cap with self-venting lungs shall be provided. The cap shall be equipped with FNST threads, rocker lugs, and chain.

**LEFT SIDE REAR PANEL DISCHARGE**

One (1) 2.50" discharge with valve shall be located on the left side panel.

An Akron Brass 2.50" generation II swing-out valve shall be provided for the discharge.

The quarter turn valve shall be manually operated with a swing handle from the left hand side pump operator's panel.

The discharge shall also come equipped with a quarter-turn 0.75" drain valve and a matching color coded bezel.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

The discharge shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2.50" MNST threads.

One (1) 2.50" chrome plated cap with self-venting lungs shall be provided. The cap shall be equipped with FNST threads, rocker lugs, and chain.

**RIGHT SIDE FRONT PANEL DISCHARGE**

One (1) 3.00" discharge with valve shall be located on the right side panel.

An Akron Brass 3.00" generation II swing-out valve shall be provided for the discharge. 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 quarter turn valve shall be manually operated with a Class1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00” x 3.00” identification tag. The controls shall be locked in any position.

The discharge shall also come equipped with a quarter-turn 0.75" drain valve and a matching color coded bezel.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

The 3.00" outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 3.00" MNST threads.

**STORZ ADAPTER**

One (1) TFT model AA1ST-NL adapter shall be provided. The adapter shall be configured with a 5.00" rigid Storz coupling and a 3.00" female NST rigid rocker lug coupling.

**STORZ CAP**

One (1) TFT model A01ST 5.00" Storz cap with lanyard shall be provided.

**RIGHT SIDE REAR PANEL DISCHARGE**

One (1) 2.50" discharge with valve shall be located on the right side panel.

An Akron Brass 2.50" generation II swing-out valve shall be provided for the discharge.

The quarter turn valve shall be manually operated with a Class1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00” x 3.00” identification tag. The controls shall be locked in any position.

The discharge shall also come equipped with a quarter-turn 0.75" drain valve and a matching color coded bezel.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

The discharge shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2.50" MNST threads.

One (1) 2.50" chrome plated cap with self-venting lungs shall be provided. The cap shall be equipped with FNST threads, rocker lugs, and chain.

**CROSSLAY PRE-CONNECT DISCHARGE #1**

One (1) 1.75" crosslay pre-connect shall be installed in the pump module above the pump. The crosslay shall be plumbed using 2.00" stainless steel pipe, and/or flexible piping. A minimum of one (1) grooved pipe coupling shall be furnished in this assembly, if necessary, to allow for flex and serviceability.

The crosslay discharge shall terminate below the hose bed floor with a 1.50" NSTM chicksan swivel adapter. The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

Crosslay discharge #1 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1.75" fire hose.

An Akron Brass 2.00" generation II swing-out valve shall be provided for crosslay #1 discharge.

The quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00” x 3.00” identification tag. The controls shall be locked in any position.

The discharge shall also come equipped with a quarter-turn 0.75" drain valve and a matching color coded bezel.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

**CROSSLAY PRE-CONNECT DISCHARGE 2**

One (1) 1.75" crosslay pre-connect shall be installed in the pump module above the pump. The crosslay shall be plumbed using 2.00" stainless steel pipe, and/or flexible piping. A minimum of one (1) grooved pipe coupling shall be furnished in this assembly, if necessary, to allow for flex and serviceability.

The crosslay discharge shall terminate below the hose bed floor with a 1.50" NSTM chicksan swivel adapter. The crosslay hose bed floor shall be slotted to allow the swivel to extend up through the floor, allowing the pre-connected hose to be pulled off either side of the apparatus without kinking the hose at the coupling connection.

Crosslay discharge #2 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1.75" fire hose.

An Akron Brass 2.00" generation II swing-out valve shall be provided for crosslay #2 discharge.

The quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00” x 3.00” identification tag. The controls shall be locked in any position.

The discharge shall also come equipped with a quarter-turn 0.75" drain valve and a matching color coded bezel.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

**DUNNAGE AREA**

A dunnage area shall be provided above the pump enclosure for equipment mounting and storage. This

area shall be furnished with a removable 0.1875" aluminum floor and shall be enclosed on the sides.

NOTE: The size of this storage area may vary when top mounted crosslays, booster reel(s), etc., are specified and located in this area.

**CROSSLAY DIVIDER**

One (1) crosslay divider shall be provided, one (1) between the #1 and #2 crosslay.

The divider shall be constructed from 0.188" thick abraded aluminum plate and shall be mounted on a base T-extrusion that provides lower support the length of the divider.

**ALUMINUM CROSSLAY COVER**

A 0.1875" polished aluminum tread plate cross lay cover shall be provided with a full length stainless steel hinge at the rear of the cover.

**CROSSLAY COMPARTMENT ENDS - VINYL FLAPS**

The crosslay compartment shall be enclosed on each end using a heavy duty vinyl flap to prevent hose from accidently unloading. The cover shall be secured with a black shock cord/ hook system on the bottom and permanently secured on the top.

The crosslay end flaps shall be **red** in color.

**DECK GUN DISCHARGE**

One (1) 3.00" discharge with 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 3.00" outlet shall be equipped with an integral, stainless steel flange terminating with 3.00" Victaulic. The discharge shall be plumbed to the top of the module using 3.00” schedule 10 stainless steel pipe. The pipe shall terminate in a 3.00” MNPT thread. The pipe shall be held in place by a 2 piece stainless steel bracket.

An Akron Brass 3.00" generation II swing-out valve shall be provided for the deck gun discharge. 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 quarter turn valve shall be manually operated with a Class 1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00” x 3.00” identification tag. The controls shall be locked in any position.

One (1) Class1 automatic 0.75" drain valve(s) shall be installed. The valve shall have an all brass body with heavy duty neoprene seal. The valve shall be normally open and shall close at 6 psi using an all brass check assembly with stainless steel spring.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

**DECK GUN MOUNTING ADAPTER**

One (1) 3" FNPT 150# Ansi Companion Flange shall be installed on the end of the deck gun outlet for mounting of a deck gun.

**LEFT HAND SIDE REAR DISCHARGE**

One (1) 2.50" discharge with valve shall be plumbed to the left hand side rear of the apparatus.

An Akron Brass 2.50" generation II swing-out valve shall be provided for the rear discharge.

The quarter turn valve shall be manually operated with a Class1 locking push pull control rod. It shall have a chrome plated zinc handle with a recessed area for 1.00” x 3.00” identification tag. The controls shall be locked in any position.

The discharge shall also come equipped with a quarter-turn 0.75" drain valve and a matching color coded bezel.

A 2.50" Class1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

The discharge shall have a 2.50" Female NST swivel rocker lug x 2.50" Male NST 30 degree chrome elbow adapter provided.

One (1) 2.50" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped rocker lugs and chain.

**4.50" MASTER PRESSURE GAUGE**

One (1) Class1, 4.50" liquid filled master pressure gauge with stainless steel bezel shall be provided, reading from 0 Hg. to 400 psi. It shall be accurate to within 1%. The gauge shall have a white face and black markings. The gauge shall be located on the pump operator's panel.

**4.50" MASTER INTAKE GAUGE**

One (1) Class 1, 4.50" liquid filled master intake gauge(s) with stainless steel bezel shall be provided, reading from -30" Hg. to 400 psi. It shall be accurate to within 1%. The gauge shall have a white face and black markings. The gauge shall be located on the pump operator's panel.

**LED WATER LEVEL GAUGE (PUMP PANEL)**

One (1) Hale model # “ITL-40R” Tank Level Gauge for indicating water level shall be installed on the pump operator's panel. The tank level gauge shall indicate the liquid level or volume on an easy to read LED display with a visual indicator at nine (9) precise levels, using one (1) color. The system shall include the ability to display “text messages” and have built-in diagnostic capabilities. Additional secondary displays (if requested) are to be easily integrated and will receive data from the same source as the Master Display.

The LED display shall be red in color.

**CLASS1 MINI WATER LEVEL GAUGE**

One (1) Hale Intelli-Tank model # 610-00049 remote mini tank level gauge for indicating the water level of the tank shall be provided in the cab. The tank level gauge shall indicate the liquid level on an easy 4 light display and show increments of 1/4 of a tank.

**PUMP, MODULE, AND RELATED ITEMS**

**ALUMINUM PUMP MODULE CONSTRUCTION**

The pump module shall be constructed entirely of extrusions and aluminum plate. The framework shall be formed from beveled aluminum alloy extrusions 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.

**INDEPENDENT PUMP MODULE**

The pump module shall be fabricated as individual unit independent from the body.

**PUMP PANEL - SIDE MOUNT**

The pump operator's control panel shall be located on the left hand side of the apparatus. The pump enclosure side panels shall be completely removable and designed for easy access and servicing.

**HINGED GAUGE PANEL**

A full width, horizontally hinged gauge access panel shall be located on the left hand side of the pump module above the main control panel.. Two (2) black powder coated SouthCo. push type locks locks shall be provided along with lanyards.

**PUMP ENCLOSURE ACCESS DOOR - RIGHT SIDE UPPER**

A pump panel access door shall be provided on the upper right side of the side mount pump enclosure. The access door shall be approximately 24.00" high and as wide as possible. Three (3) black powder coated SouthCo. push type locks locks shall be provided along with lanyards.

The drains located on the right hand side panel shall be fastened to the lower panel, which shall be stationary.

**PUMP PANEL MATERIAL**

The pump module panels shall be fabricated from 14 gauge 304L stainless steel with a brushed finish.

**PUMP PANEL LIGHT SHIELD, LH SIDE PANEL**

One (1) LED strip light shall be installed under an instrument panel light hood on the left side pump panel.

**PUMP PANEL LIGHT SHIELD, RH SIDE PANEL**

One (1) LED strip light shall be installed under an instrument panel light hood on the right side pump panel.

A weather resistant switch, located on the pump operator's panel shall be provided to activate the lights.

**PUMP COMPARTMENT LIGHTS (LED)**

Two (2) clear LED lights shall be provided inside the pump compartment area. Each shall be switched.

**FRONT PUMP HOUSE COVER**

The front of the pump enclosure shall be covered with .125" aluminum treadplate.

**REAR PUMP HOUSE COVER**

The rear of the pump enclosure shall be covered with .125" aluminum treadplate.

**LEFT SIDE RUNNING BOARD**

The left pump panel shall be equipped with a side running board. The running board shall be constructed of 0.125" embossed fire apparatus bright aluminum treadplate. It shall be a minimum of approximately 11.00" deep x the width of the module. The running board shall have an upward bend on the inside edge to act as a kick plate. The running board shall be attached to a frame mounted outrigger support structure. The running board shall have a 3.00" downward bend on the front and side faces with a 1.00" underside return for superior strength.

**RIGHT SIDE RUNNING BOARD**

The right pump panel shall be equipped with a side running board. The running board shall be constructed of 0.125" embossed fire apparatus bright aluminum treadplate. It shall be a minimum of approximately 11.00" deep x the width of the module. The running board shall have an upward bend on the inside edge to act as a kick plate. The running board shall be attached to a frame mounted outrigger support structure. The running board shall have a 3.00" downward bend on the front and side faces with a 1.00" underside return for superior strength.

**HOSE RESTRAINT LABEL - FAMA# 22**

A permanent label shall be provided near any hose storage area. The label shall instruct the operator to insure that all hose is properly secured prior to placing the apparatus in motion and to provide warning of potential dangers, including injury or death, in failing to do so.

**INTAKE/DISCHARGE CAP PRESSURE LABEL - FAMA# 18**

A permanent label shall be provided in all areas that intakes and discharges are capped. The label shall give instruction on how to properly remove the cap. The label shall also warn of potential dangers, injury or death that be caused by failing to follow proper cap removal procedures.

**TRAINED OPERATOR ONLY LABEL - FAMA# 25**

A permanent label shall be provided on the pump panel that states that only properly trained personnel should operate the apparatus and shall indicate that injury or death could occur as a result.

**PUMP PANEL ID PLATE**

An identification plate shall be installed on the pump operator control panel to identify the fire pump serial number, model number, and performance.

**COLOR CODED PUMP PANEL LABELING AND NAMEPLATES**

Discharge and intake valve controls shall be color coded in compliance to guidelines of applicable sections of NFPA standards. Innovative Controls permanent type nameplates and instruction panels shall be installed on the pump panel for safe operation of the pumping equipment and controls.

## WATER TANK AND RELATED COMPONENTS

**1000 GALLON POLY TANK- "L" DESIGN**

The tank shall have a capacity of 1000 US gallons / 832 Imperial gallons / 3785 liters.

**TANK MATERIAL**

This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. Tank shell thickness may vary depending on the application and may range from 0.50" to 1.00” as required. Internal baffles are generally 0.375” in thickness.

**CONSTRUCTION**

The booster and/or foam tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include PolyProSeal™ technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 0.375" PT3™ polypropylene.

All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank’s unique Full Floor Design™. Tolerances in design allow for a maximum variation of 0.125” on all dimensions.

The tank cover shall be constructed of 0.50" thick PT3 polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 0.375" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2.00" minimum polypropylene dowels spaced a maximum of 40.00” apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two (2) lifting dowels shall accommodate the necessary lifting hardware.

**OUTLETS**

There will be two (2) standard tank outlets: one (1) for the tank-to-pump suction line, which shall be sized to provide adequate water flow to the pump; and, one (1) for tank fill line, which shall be sized according to the NFPA minimum size chart for booster tanks. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and be capable of withstanding sustained fill rates of up to 1000 gpm.

**CAPACITY CERTIFICATION**

All water and foam tanks shall be tested and certified as to capacity.

**CENTER OF GRAVITY**

A center of gravity calculation shall be determined for each tank and provided as requested in order to provide the apparatus manufacturer with the necessary data to design and certify the apparatus with

respect to the NFPA requirements regarding rollover stability. This information may be used by the apparatus manufacturer to assist in the calculation of the apparatus's ability to meet the tilt table static rollover threshold or calculated Center of Gravity requirements per NFPA.

**WATER FILL TOWER AND COVER**

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 0.50" polypropylene and shall be a minimum dimension of 12.00" x 12.00" outer perimeter. The tower shall have a 0.25" thick removable polypropylene screen and a polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid.

**FILL TOWER LOCATION**

The fill tower shall be located in the left front area of the tank.

Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4.00" that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction.

**SUMP**

There shall be one (1) sump standard per tank. The sump shall be constructed of a minimum of 0.50" polypropylene and be located in the left front quarter of the tank, unless specified otherwise. On all tanks that require a front suction, a 3.00" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3.00" N.P.T. threaded outlet on the bottom for a drain plug per NFPA. This shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 3.00" above the inside floor.

**WATER TANK CLEAN-OUT PLUG**

A 3.00" cleanout plug shall be provided in the bottom of the tank.

**HOSE BED - 72.00" - LOW DESIGN**

The body shall have an intergraded upper hose bed. The floor of the hose bed shall be a removable welded assembly constructed of 6.00" wide aluminum hose bed slats and structural channel cross members. Two (2) cross car Unistrut style channels shall be incorporated in the design for divider mounting.

**ALUMINUM HOSEBED DIVIDER(S)**

There shall be Two (2) hosebed divider(s) provided. The hosebed divider(s) shall be constructed of 0.25" smooth aluminum plate with an extruded aluminum base welded to the bottom. The divider(s) shall be adjustable from side to side in the hose bed to accommodate varying hose loads.

**HOSEBED PARTITION REINFORCEMENT**

The top and rear edge of each of the hose bed partitions will have a 0.75" integral tubing reinforcement welded on for additional support.

**ADDITIONAL ALUMINUM HOSEBED DIVIDERS**

There shall be two (2) additional hosebed dividers provided. The hosebed dividers shall be constructed of 0.25" smooth aluminum plate with an extruded aluminum base welded to the bottom. The dividers shall be adjustable from side to side in the hose bed to accommodate varying hose loads.

**HOSE BED COVER**

A heavy duty 18 oz. vinyl hose bed cover shall be provided to protect the hose load from the weather. The cover shall extend from the front of the hosebed to the rear and then extend downward to cover the exposed rear of the bed and from the left side to the right side of the hosebed. The cover shall be secured utilizing a velcro fastening system at the front and sides of the hosebed body.

The vinyl cover shall be **RED** in color.

## APPARATUS BODY

**BODY DESIGN AND CONSTRUCTION**

The body shall be modular in design, allowing it to be removed and remounted on a new chassis. The body shall be fabricated using aluminum extrusions, angle, smooth aluminum sheet and aluminum treadplate. The apparatus body shall have full height compartments on both sides.

The body shall have a "L" tank design in order to incorporate a lowered hose bed.

**FLOOR AND UNDERSTRUCTURE**

The tank area floor shall be a single piece design made of 0.1875" Aluminum Sheet. The floor shall be supported by extruded 6061 aluminum alloy 2.00" x 4.00" x 0.250" wall structural tube crossmembers.

**BODY AND COMPARTMENT FABRICATION - 3/16" ALUMINUM**

All compartment panels and body side sheets will be fabricated entirely of 0.1875" aluminum (5052-H32).

**COMPARTMENT CONSTRUCTION**

The compartments shall be completely formed of 0.1875" 5052-H32 aluminum alloy.

Compartment floors will be welded to the compartment walls and have a sweep out design for easy cleaning.

**ACCESS PANELS**

Removable access panels will be provided (if applicable) to access fuel tank sender, electrical junction compartment and rear body mounts.

Protective panels will be located in the rear compartments providing access to the lights and associated wiring. The covers will also serve as protective covers to prevent inadvertent damage to lights or wiring from tools or equipment located in the compartment.

**COMPARTMENT LOUVERS**

Ventilation between compartments to atmosphere shall be provided and located to avoid water entry into compartments.

**COMPARTMENT SHELF TRACKS - ALUMINUM**

All side body compartments be furnished with adjustable shelving track installed. The shelving track shall include a minimum of four (4) aluminum Uni-strut style channel tracks, mounted vertically on compartment side walls or vertical partitions.

**COMPARTMENT SHELVING - SIDE COMPARTMENTS**

Adjustable shelving shall be installed in the side compartments as identified later in this specification. Each shelf shall be made of 0.1875” smooth aluminum with a 2.00” high perimeter on the front and rear with side supports. Shelving will be vertically adjustable with spring nuts in aluminum strut channel.

**FENDER PANELS**

A single piece wheel well panel made of 0.1875" aluminum sheet shall be installed with no sharp edges to cut or damage cleaning equipment used in the wheel well area. The wheel well design shall provide for maximum wheel jounce and for use of tire chains without contacting the fender panel.

**REAR WHEEL WELL LINERS**

The rear wheel wells shall be equipped with replaceable circular liners to prevent road debris damage to adjacent side compartments. The liners shall be made from a single circular panel of 0.125" smooth aluminum and shall be the full depth of the side compartments. They shall be bolted in place and shall feature end flange bottom drains.

**REAR BODY FENDERETTES**

A roll-formed, polished stainless steel fenderette shall be installed around the outboard edge of the rear wheel well openings to protect the body sides from road debris. They shall be bolted to the body and shall be replaceable.

**BODY FRONT WALL OVERLAY**

The front face of the side compartments, next to the driver and officer pump panels will be overlaid with full height aluminum tread plate protection panels.

**TOP PROTECTION**

The top of the welded in compartment ceiling will be overlaid with aluminum tread plate to provide an NFPA compliant stepping surface.

**BODY SIDE RUB RAILS**

Replaceable extruded aluminum channel rub rails, 2.00" high x 0.75" deep x 0.125" wall, shall be provided below the lower side compartments. Each rub rail shall have a black rubber bumper strip and mounting stand-off spacers. All rub rail ends shall be angle cut, back toward the body to eliminate the possibility of snagging crew clothing or equipment.

**TOW HOOKS – REAR**

Two (2) painted tow eyes will be furnished on the rear of the vehicle. The tow eyes will be made from plate steel and will be bolted directly to the chassis frame rails with grade 8 bolts and will extend

below the body.

**BODY WIDTH**

The width of the apparatus body from the outside face of the left compartments to the outside face of the right compartments shall be 100.00" wide.

**COMPARTMENT HEIGHT, LH SIDE**

The left hand side body compartments shall be 70.00".

**COMPARTMENT HEIGHT, RH SIDE**

The right hand side body compartments shall be 70.00".

**COMPARTMENT DEPTH**

The side compartments on the left and right hand side of the pumper body shall have a useable depth of 28.00" in the lower 30.00" tall area and 13.75" in the upper portion. The compartments above the wheel wells shall have a useable depth of 13.75".

**ROLL-UP DOORS**

All compartment doors shall be equipped with AMDOR brand roll-up doors. The slats shall be 1.00” double wall aluminum with continuous ball and socket hinge joints designed to prevent water ingression and weather tight recessed dual durometer seals.

The interior door curtains shall be smooth to prevent equipment hang-ups. The door tracks and side frames shall each be one-piece aluminum. Each side seal shall be recessed, and non-marring with UV stabilizers to prevent warping.

The bottom panel flange shall have cut-outs for ease of access with gloved hands. The door strikers shall provide support beneath the lift bar to prevent door curtain bounce and potential false door ajar indications.

**DOOR FINISH**

The doors shall have a satin finish.

**DOOR LOCKS - KEYED, MANUAL**

Each roll-up door door shall have a cylindrical lock installed by the roll-up door manufacturer.

The lock key type shall be: J-236

**COMPARTMENT LIGHT(S)**

One (1) full height Luma Bar LED strip light(s) shall be installed inside each of the body compartments.

The compartment light(s) shall be controlled by a magnetic "On-Off" switch located on each compartment door.

**DRIVER’S SIDE COMPARTMENT DIMENSIONS:**

**LEFT SIDE COMPARTMENT IN FRONT OF REAR WHEELS, L1**

There shall be a full height compartment located ahead of the rear wheels on the left side of the apparatus body. This compartment shall be designated as L1 within these specifications.

- Compartment Dimensions: 46.50" wide x 62.00" high
- Door Opening: 41.50" wide x 57.00" high

**ADJUSTABLE SHELVING TRACKS**

There shall be vertically mounted uni-strut shelf trac for shelving installation.

**ADJUSTABLE SHELF**

There shall be One (1) 0.1875" aluminum full depth adjustable shelf/ shelves located in the compartment.

**LEFT SIDE ABOVE WHEEL COMPARTMENT, L2**

There shall be a standard height compartment located above the rear wheels on the left side of the apparatus body. This compartment shall be designated as L2 within these specifications.

- Compartment Dimensions: 59.00" wide x 29.50" high
- Door Opening: 54.00" wide x 24.50" high

**ADJUSTABLE SHELVING TRACKS**

There shall be vertically mounted uni-strut shelf trac for shelving installation.

**ADJUSTABLE SHELF**

There shall be One (1) 0.1875" aluminum half depth adjustable shelf/ shelves located in the compartment.

**LEFT SIDE COMPARTMENT BEHIND REAR WHEELS, L3**

There shall be a full height compartment located behind of the rear wheels on the left side of the apparatus body. This compartment shall be designated as L3 within these specifications.

- Compartment Dimensions: 56.50" wide x 62.00" high
- Door Opening: 51.50" wide x 57.00" high

**ADJUSTABLE SHELVING TRACKS**

There shall be vertically mounted uni-strut shelf trac for shelving installation.

**ADJUSTABLE SHELF**

There shall be One (1) 0.1875" aluminum full depth adjustable shelf/ shelves located in the compartment.

**PASSENGER’S SIDE COMPARTMENT DIMENSIONS:**

**RIGHT SIDE COMPARTMENT IN FRONT OF REAR WHEELS, R1**

There shall be a full height compartment located ahead of the rear wheels on the right side of the apparatus body. This compartment shall be designated as R1 within these specifications.

- Compartment Dimensions: 46.50" wide x 62.00" high
- Door Opening: 41.50" wide x 57.00" high

**ADJUSTABLE SHELVING TRACKS**

There shall be vertically mounted uni-strut shelf trac for shelving installation.

**ADJUSTABLE SHELF**

There shall be One (1) 0.1875" aluminum full depth adjustable shelf/ shelves located in the compartment.

**RIGHT SIDE ABOVE WHEEL COMPARTMENT, R2**

There shall be a standard height compartment located above the rear wheels on the right side of the apparatus body. This compartment shall be designated as R2 within these specifications.

- Compartment Dimensions: 59.00" wide x 29.50" high
- Door Opening: 54.00" wide x 24.50" high

**ADJUSTABLE SHELVING TRACKS**

There shall be vertically mounted uni-strut shelf trac for shelving installation.

**ADJUSTABLE SHELF**

There shall be One (1) 0.1875" aluminum half depth adjustable shelf/ shelves located in the compartment.

**RIGHT SIDE COMPARTMENT BEHIND REAR WHEELS, R3**

There shall be a full height compartment located behind of the rear wheels on the right side of the apparatus body. This compartment shall be designated as R3 within these specifications.

- Compartment Dimensions: 56.50" wide x 62.00" high
- Door Opening: 51.50" wide x 57.00" high

**ADJUSTABLE SHELVING TRACKS**

There shall be vertically mounted uni-strut shelf trac for shelving installation.

**ADJUSTABLE SHELF**

There shall be One (1) 0.1875" aluminum full depth adjustable shelf/ shelves located in the compartment.

**REAR BODY CONFIGURATION**

The CR1 compartment will form a “flat back” design with no recess at the rear of the body.

**REAR CENTER COMPARTMENT, CR1**

There shall be a standard height compartment located at the rear of the apparatus body. This compartment shall be designated as CR1 within these specifications.

- Compartment Dimensions: 42.00" wide x 26.00" high
- Door Opening: 38.00" wide x 20.00" high
- Compartment Depth: 28.00" deep

**ADJUSTABLE SHELVING TRACKS**

There shall be vertically mounted uni-strut shelf trac for shelving installation.

**ADJUSTABLE SHELF**

There shall be One (1) 0.1875" aluminum full depth adjustable shelf/ shelves located in the compartment.

**REAR STEP - 12 D X 100 W - TAPERED ENDS**

The rear step shall be 12.00" deep and extend beyond the body compartments. The step shall be 100.00” wide and have tapered corners for improved clearance. The step shall be fabricated from 0.1875" tread plate plate and shall be rigidly reinforced. The rear edge of the step shall be designed to accommodate the rear clearance lights. The rear step overlay shall be bolted in place with an approximate 0.25" clearance gap between the step and rear body panel.

**HARD SUCTION STORAGE - LEFT**

One (1) horizontally mounted aluminum hard suction hose trays with velcro straps shall be provided above the left side body compartments.

**HARD SUCTION STORAGE - RIGHT**

One (1) horizontally mounted aluminum hard suction hose trays with velcro straps shall be provided above the right side body compartments.

**SUCTION HOSE SOURCE**

New suction hose(s) shall be provided by the manufacturer and shall be detailed later in this specification.

**LADDER STORAGE - RIGHT**

Ladders shall be stored on the right side of the apparatus body below the hosebed

The ladder storage shall have the capacity for the following:

- One (1) Alco-Lite aluminum 24 ft. two-section extension ladder, model # PEL-24
- One (1) Alco-Lite aluminum 14 ft roof ladder, model # PRL-14
- One (1) Alco-Lite aluminum 10 ft. folding ladder, model # FL-10

**LADDER SOURCE**

The ladders shall be provided by the manufacturer and shall be detailed later in this specification.

**PIKE POLE STORAGE**

Two (2) pike pole storage tubes shall be provided in the ladder compartment.

**PIKE POLE SOURCE**

The pike poles shall be provided by the purchaser.

**SCBA BOTTLE COMPARTMENTS**

Four (4) SCBA bottle tube compartments shall be installed, one (1) over each wheel well area. The compartments shall be constructed of a black molded non-abrasive plastic polymer designed to provide SCBA scuff protection. The doors shall be stainless steel with a brushed finish and have a black weatherproof SouthCo. latch assembly.

**FUEL FILL**

An aluminum cup style fuel fill shall be installed in the left hand side wheel well rear of the axle. It shall be labeled “Ultra Low Sulphur Diesel Fuel Only”.

**FOLDING STEPS - LH SIDE REAR OF BODY**

Two (2) Innovative Controls model 3004234 folding steps shall be provided on the left hand side rear of the body. Each step shall have two (2) cast-in handles, that are large enough for use while wearing gloves. The step(s) shall exceed the NFPA requirements for stepping surface and slip resistance. There shall be a barrier material installed between the body surface and the steps.

**STEP LIGHTS**

There shall be one (1) LED light incorporated into the folding step assembly above the stepping surface. The light(s) shall be wired to activate with the parking brake.

**FOLDING STEPS - RH SIDE REAR OF BODY**

One (2) Innovative Controls model 3004234 folding steps shall be provided on the right hand side rear of the body. The step(s) shall exceed the NFPA requirements for stepping surface and slip resistance. There shall be a barrier material installed between the body surface and the steps.

**STEP LIGHTS**

There shall be one (1) LED light incorporated into the folding step assembly above the stepping surface. The light(s) shall be wired to activate with the parking brake.

**FOLDING STEPS - LH SIDE FRONT OF BODY**

Four (4) Innovative Controls model 3007732 folding steps shall be provided on the left hand side front of the body. Each step shall have one (1) cast-in handle, that are large enough for use while wearing gloves. The step(s) shall exceed the NFPA requirements for stepping surface and slip resistance.

**FOLDING STEPS - RH SIDE FRONT OF BODY**

Four (4) Innovative Controls model 3007732 folding steps shall be provided on the right hand side front of the body. Each step shall have one (1) cast-in handle, that are large enough for use while wearing gloves. The step(s) shall exceed the NFPA requirements for stepping surface and slip resistance.

**STEP LIGHTS ACTIVATION**

The step light(s) shall be wired to activate with the parking brake.

**EXTERIOR GRAB RAILS**

Each grab rail shall be non-slip, 1.25” diameter extruded polished aluminum grab rails with rubber inserts designed to provide maximum gripping ability, strength, and durability. The rails shall comply with NFPA 1901-2009.

**GRAB RAILS, REAR STEP, VERTICAL**

Two (2) extruded aluminum non-slip grab rails shall be provided and vertically mounted on the rear of the apparatus, one (1) on each side of the body.

**GRAB RAIL, RH FRONT**

One (1) extruded aluminum non-slip grab rail shall be provided and mounted on the front, upper, right hand side of the body.

**GRAB RAIL, BELOW HOSEBED, HORIZONTAL**

One (1) extruded aluminum non-slip grab rail shall be provided and horizontally mounted below the hosebed on the rear of the apparatus.

**NFPA 1901 CERTIFIED 12 VOLT ELECTRICAL SYSTEM**

The 12-volt apparatus body electrical system shall be provided and shall be in compliance with NFPA 1901 testing and certification procedures as follows:

**NFPA MINIMUM ELECTRICAL LOAD DEFINITION**

The NFPA 1901 defined minimum electrical load shall consist of the total amperage required to simultaneously operate the following in a stationary mode:
Propulsion engine and transmission.

1. The clearance and marker lights.
2. Communication equipment. 5 amp default.
3. Illumination of all walking surfaces, the ground at all egress points, control and instrumentation panels and 50% of total compartment lighting.
4. Minimum warning lights required for "blocking right of way" mode.
5. The current to simultaneously operate and fire pump and all specified electrical devices.
6. Anything defined by the purchaser, in the advertised specifications, to be critical to the mission of the apparatus.

**RESERVE CAPACITY TEST**

The first electrical test to be performed will be the Reserve Capacity Test. All items listed in NFPA Minimum Load Definition shall be activated with the engine shut off. After 10 minutes of operation, the items 1-7 shall be deactivated. After deactivation, the battery system shall have ample reserve to start the engine.

**ALTERNATOR PERFORMANCE TEST AT IDLE**

The second electrical test to be performed shall be Alternator Performance Test at Full Load. All electrical loads shall be activated with the engine running up to the governed rpm for two hours. During the test, the system voltage shall not drop below 11.7 volts or have excessive battery discharge for more than 120 seconds. Any loads not defined in the NFPA Minimum Electrical Load may be load managed to pass test.

**TEST CONDITIONS**

All electrical testing shall be performed with the engine compartment at approximately 200 degrees.

**12 VOLT ELECTRICAL SYSTEM**

The electrical system shall include all panels, electrical components, switches and relays, wiring harnesses and other electrical components. The electrical equipment installed by the apparatus manufacturer shall conform to current automotive electrical system standards, the latest Federal DOT standards, and the requirements of the applicable NFPA standards.

All wiring shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for the protected circuit. Voltage drops in all wiring from the power source to the using device shall not exceed 10 percent. The wiring and wiring harness and insulation shall be in conformance to applicable SAE and NFPA standards. The wiring harness shall conform to SAE J-1128 with GXL temperature properties. All exposed wiring shall be protected in a loom with a minimum 289 degree Fahrenheit rating. All wiring looms shall be properly supported and attached to body members. The electrical conductors shall be constructed in accordance with applicable SAE standards, except when good engineering practice requires special construction.

The wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection and shall be installed in accordance with the device manufacturer's instructions. Electrical connections shall be with mechanical type fasteners and large rubber grommets where wiring passes through metal panels.

There shall be no exposed electrical cabling, harnesses, or terminal connections located in compartments, unless they are enclosed in a junction box or covered with a removable electrical panel. The wiring shall be secured in place and protected against heat, liquid contaminants and damage. Wiring shall be uniquely identified every three-inches (3") by color coding or permanent marking with a circuit function code.

The electrical circuits shall be provided with low voltage overcurrent protective devices. Such devices shall be accessible and located in required terminal connection locations or weather resistant enclosures. The overcurrent protection shall be suitable for electrical equipment and shall be automatic reset type and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. The system shall have electro-magnetic interference suppression provided as required in applicable SAE standards.

The electrical system shall include the following:

- Electrical terminals in weather exposed areas shall have a non-conductive grease or spray applied. A corrosion preventative compound shall be applicable to all terminal plugs located outside of the cab or body.

- The electrical wiring shall be harnessed or be placed in a protective loom.
- Holes made in the roof shall be caulked with silicone. Large fender washers shall be used when fastening equipment to the underside of the cab roof.
- Any electrical component that is installed in an exposed area shall be mounted in a manner that will not allow moisture to accumulate in it.
- All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.

**ROCKER SWITCHES**

The warning lights and electrical functions shall be controlled by switch panels as detailed in the chassis specification

**CAB GROUND LIGHTS**

The cab ground lights shall be supplied with the custom chassis.

**PUMP PANEL GROUND LIGHTS - SUPPLIED WITH PUMP**

Two (2) LED ground lights with an outward facing angle brackets shall be installed under the pump panel running boards. One (1) light shall be located on the driver side and one (1) light located on the officer side of the apparatus.

**FRONT OF BODY GROUND LIGHTS**

Two (2) LED ground lights with outward facing angle brackets shall be installed under the front of the body. One (1) light shall be located on the driver side and one (1) light shall be located on the officer side of the apparatus

**REAR STEP GROUND LIGHTS**

Two (2) LED ground lights with outward facing angle brackets shall be installed under the rear step of the apparatus, one (1) each side.

**GROUND LIGHT SWITCHING**

The cab and body ground lights shall activate by engaging the parking brake.

**REAR DIRECTIONALS**

Rear directional lighting shall be supplied as follows:

Two (2) Whelen model M62BTT LED brake/tail lights shall be installed on the rear of the body. Each light shall have a red lens.
Two (2) Whelen model M62T Amber LED turn signal lights shall be installed on the rear of the body. Each light shall have a color lens.
Two (2) Whelen model M62BU LED reverse lights shall be installed on the rear of the body.

**HOUSINGS FOR DIRECTIONALS**

The two (2) sets of Whelen rear signal lights shall each be housed in a vertical chrome plated housing, designed to hold four (4) lights each. The fourth opening shall be for the lower rear warning lights. The

lights shall be mounted in order, from top to bottom, as described above.

**MARKER LIGHTS**

LED marker lights shall be installed on the vehicle in conformance to the Department of Transportation requirements. The side and rear of the body will be provided with reflectors. All marker lights shall be incorporated into the headlight circuit of the cab/chassis.

Two (2) amber reflectors shall be provided on the apparatus body lower side, as far forward and low as practical, one (1) each side if the apparatus is 30 feet long or longer.
Four (4) red reflectors shall be provided on the apparatus rear, one (1) each side and two (2) on the rear.

**LICENSE PLATE LIGHT**

A license plate bracket with LED light shall be provided and installed on the rear of the body. It shall be wired to come on with the headlights.

**HOSE BED LOADING LIGHT**

One (1) 12V LED hosebed floodlight shall be installed on the front of the hosebed of the apparatus. his light shall provide illumination of the hosebed area.

The light(s) shall be wired to activate with the parking brake.

**SIDE FACING UPPER CAB SCENE LIGHTS**

One (1) pair of Whelen M92SLC EZ Series LED scene lights shall be installed, one (1) each side of the cab. The light(s) shall be supplied and installed with a chrome bezel.

**SIDE FACING UPPER FRONT BODY SCENE LIGHTS**

One (1) pair of Whelen M92SLC EZ Series LED scene lights shall be installed. The lights shall be located on the left and right sides of the upper front portion of the apparatus body. Each light shall be supplied and installed with a chrome bezel.

**SIDE FACING UPPER REAR BODY SCENE LIGHTS**

One (1) pair of Whelen M92SLC EZ Series LED scene lights shall be installed. The lights shall be located on the left and right sides of the upper rear portion of the apparatus body. Each light shall be supplied and installed with a chrome bezel.

**REAR FACING UPPER BODY SCENE LIGHTS**

One (1) pair of Whelen M92SLC EZ Series LED scene lights shall be installed. The lights shall be located on the rear of the apparatus body, one (1) each side. Each light shall be supplied and installed with a chrome bezel.

**SCENE ACTIVATION**

The scene lights shall be activated by individual rocker switches located in the switch panel, one (1) for each side of the apparatus.

**SCENE LIGHT SWITCHING**

The rear scene lights shall activate automatically upon placing the transmission into reverse.

**WARNING LIGHT FLASH PATTERN**

All of the perimeter warning lights shall be set to the default NFPA flash pattern as provided by the warning light manufacturer.

**HEADLIGHT FLASHER**

An alternating high beam headlight flashing system shall be supplied with the custom chassis.

**CAB FRONT LIGHTBAR**

One (1) Whelen Freedom IV LED 72.00" lightbar shall be mounted on the front of the cab roof. The lightbar shall feature eight (8) red LED light modules and two (2) clear LED light modules. The entire lightbar shall feature a clear lens. The clear lights shall be disabled with park brake engaged.

**LIGHT BAR SWITCH**

The light bar shall be controlled by a rocker switch located on the switch panel. The switch shall be labeled "LIGHT BAR". The switch shall only be active when the master warning switch is engaged.

**SIDE FACING UPPER FRONT BODY WARNING LIGHTS**

One (1) pair of Whelen model M9 LED warning lights shall be installed, one (1) on each side of the upper front portion of the apparatus body.

The driver side warning light shall be a Whelen model M9RC red LED with clear lens.

The officer side warning light shall be a Whelen Model M9RC red LED with clear lens.

Each light shall be mounted with a Whelen Model M9FC chrome flange.

**SIDE FACING UPPER REAR BODY WARNING LIGHTS**

One (1) pair of Whelen model M9 LED warning lights shall be installed, one (1) on each side of the upper rear portion of the apparatus body.

The driver side warning light shall be a Whelen Model M9RC red LED with clear lens.

The officer side warning light shall be a Whelen Model M9RC red LED with clear lens.

Each light shall be mounted with a Whelen Model M9FC chrome flange.

**UPPER REAR WARNING LIGHTS**

One (1) pair of Whelen model M9 LED warning lights shall be installed, one (1) on each side of the upper rear of the apparatus body.

The driver side warning light shall be a Whelen Model M9RC red LED with clear lens.

The officer side warning light shall be a Whelen Model M9RC red LED with clear lens.

Each light shall be mounted with a Whelen Model M9FC chrome flange.

**UPPER WARNING LIGHT SWITCHING**

One (1) rocker switch with indicator shall be installed on the switch panel in the cab to control the upper warning lights. The switch shall be labeled "UPPER WARNING". The switch shall only be active when the master warning switch is engaged.

**LOWER FRONT WARNING LIGHTS**

The lower front warning lights shall be supplied with the cab.

**LOWER INTERSECTION WARNING LIGHTS**

The lower intersection warning lights shall be supplied with the cab.

**LOWER CHASSIS SIDE WARNING LIGHTS**

One (1) pair of Whelen model M6 LED warning lights shall be installed, one (1) each side of the cab mounted over the front wheel well directly over the center of the front axle.

The driver side warning light shall be a Whelen Model M6R red Super-LED with red lens.

The officer side warning light shall be a Whelen Model M6R red Super-LED with red lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

**LOWER MID-BODY WARNING LIGHTS**

One (1) pair of Whelen model M6 Series LED warning lights shall be installed, one (1) each side of the apparatus, mid-body.

The driver side warning light shall be a Whelen Model M6RC red Super-LED with clear lens.

The officer side warning light shall be a Whelen Model M6RC red Super-LED with clear lens.

Each light shall be mounted with a Whelen Model M6FC chrome flange.

**LOWER REAR WARNING LIGHTS**

One (1) pair of Whelen model M6 Series LED warning lights shall be installed, one (1) each side of the lower rear of the apparatus body.

The driver side warning light shall be a Whelen model M6RC red super-LED with clear lens.

The officer side warning light shall be a Whelen model M6RC red super-LED with clear lens.

Each light shall be mounted with a Whelen model M6FC chrome flange.

**LOWER WARNING LIGHT SWITCHING**

One (1) momentary rocker switch with indicator shall be installed on the switch panel in the cab to control the lower warning lights. The switch shall be labeled "LOWER WARNING". The switch shall only be active when the master warning switch is engaged.

**ELECTRIC SIREN AND CONTROL**

The electric siren shall be supplied with the custom chassis.

**ELECTRONIC SIREN SPEAKER**

The electronic siren speaker(s) shall be supplied with the custom chassis.

## PAINT, STRIPING, AND LETTERING SECTION

**CHASSIS PAINT**

The chassis shall be painted by the OEM Chassis Manufacturer.

**PAINT PROCESS**

The body exterior shall have no mounted components prior to painting to assure full coverage of treatments. Compartment doors (if applicable) will be painted separately to assure proper paint coverage on body, doorjambs and door edges.

All surfaces shall be sanded to remove all burrs and imperfections before etching and treatment.

The body shall be totally removed from the chassis during the painting process to insure the entire unit is covered.

PPG wax & grease solvent shall be used to clean and prep the body surface prior to any sanding.

The surface shall then be rinsed with freshwater. This step removes wax, grease and other surface contaminants, thus leaving a bright, clean and conditioned surface.

**PAINT FINISH**

The body shall be painted with a PPG Delfleet Evolution Paint System.

As part of the curing process the painted body shall go through a baking process. The painted components shall be baked at 185 degrees for 3 hours to achieve a complete coating cure on the finished product.

After bake and ample cool down time, the coated surface shall be sanded using 3M 1000, 1200, and or 1500 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed with 3M Super-duty compound to add extra shine to coated surface. No more than .5 mil shall be removed in this process.

All products and technicians shall be certified by PPG every two (2) years.

**ANTI-CORROSION PROTECTION**

Where dissimilar metals must be joined, overlaid, share perforations or otherwise come in contact with each other to achieve construction, performance or aesthetic requirements, such items shall be separated by a continuous contact, nonconductive coating or film to prevent or otherwise mitigate

the effects of electrolysis. Only stainless-steel hardware and fasteners shall be used in the construction of the apparatus. Where stainless steel fasteners pass through an aluminum component, the fastener contact surfaces, including the head, washer and nut shall be coated with ECK anti-corrosion material.

**UNDERCOATING**

The body underside, including the sub-frame and the inside of the wheel wells, NOT THE WHEEL WELL LINERS, shall be thoroughly coated with SWT commercial automotive undercoat and sound deadening material to protect the body module against corrosion. The coating shall be black and shall be tested to ASTM B117 Salt Spray test for 1,000 hours at 10-mils.

**COMPARTMENT INTERIOR FINISH**

The interior of the compartments shall be finish painted with Multispec #344767 Gray Stone scuff resistant paint to provide a protective application over all of the compartment interior surfaces.

**WHEEL RIMS**

The chassis wheels shall be as furnished by the chassis OEM. No additional finishes shall be provided by apparatus manufacturer.

**REFLECTIVE LETTERING - PURCHASER SUPPLIED**

Reflective lettering shall be applied to the cab doors at the direction of the purchaser.

Photos or drawings of the lettering and striping layout shall be provided by the purchaser prior to construction.

**REAR CHEVRON STRIPING**

At least 50% of the rear facing vertical surface shall be covered with alternating strips of reflective striping.
The striping shall be 6" Oralite reflective striping.

**RED & FLUORESCENT YELLOW-GREEN ORALITE V98**

The Oralite V98 reflective tape shall be #12 red and #112 fluorescent yellow-green in color.

**FOUTS BROS. LOGO PLATE(S)**

One (1) Fouts Bros. logo plate will be affixed to the finished apparatus.

**LOOSE EQUIPMENT**

The following items shall be provided and shipped loose with the completed apparatus at the time of delivery:

**SUCTION HOSE**

Two (2) 6.00" X 10’ section(s) of KOCHEK, PVC type hard, suction hose shall be provided on the apparatus. The hose(s) shall be light weight type with pyrolite, long handle female x rocker lug male, NST threads. The hose shall be black in color.

**EXTENSION LADDER, 2 SECTION**

One (1) 24 foot, Alco-Lite model# PEL-24, two (2) section aluminum extension Ladder shall be supplied with the finished apparatus.

**ROOF LADDER**

One (1) 14 foot, Alco-Lite model # PRL-14, single section aluminum roof ladder with folding roof hooks shall be supplied with the finished apparatus.

**FOLDING ATTIC LADDER**

One (1) 10 foot, Alco-Lite model FL-10, aluminum folding attic ladder shall be supplied with the finished apparatus.

**ONE YEAR APPARATUS WARRANTY**

The complete apparatus detailed herein shall be warranted against defects in materials and workmanship for a period of twelve (12) months, effective upon pick up or delivery of the completed apparatus to the purchaser, as detailed in the respective warranty documents. Any unauthorized alterations or modifications to the apparatus shall void this warranty.

Other warrantees, as provided by individual component manufacturers may extend beyond this warranty.

**APPARATUS BODY WARRANTY, TEN YEAR**

The apparatus body as detailed herein shall have a structural warranty against defects in materials and workmanship for a period of ten (10) years, effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the body shall void this warranty.

**PLUMBING WARRANTY, TEN YEAR**

A Stainless Steel Plumbing/Piping warranty shall be provided by the apparatus manufacturer for products of its manufacture to be free from defects in material and workmanship, under normal use and service, for a period of ten (10) years effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the plumbing shall void this warranty.

**PAINT WARRANTY, FIVE YEAR**

The finish paint as used on the proposed apparatus shall be warranted against defects in materials and workmanship for a prorated period of five (5) years, effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the apparatus shall void this warranty.

**TANK WARRANTY, LIFETIME**

United Plastic Fabricating, Inc. (hereinafter called “UPF”) warrants each POLY-TANK®, Booster/Foam Tank

POLYSIDE® Wetside Tank, Integrator Tank/Body, ELLIPSE™ Elliptical Tank, Ellip-T-Tank Tank and DEFENDER™ Skid Tank to be free from defects in material and workmanship for the service life of the original vehicle (vehicle must be actively used in an emergency response for fire suppression). All UPF Tanks must be installed and operated in accordance with the UPF Installation and Operating Guidelines.

**APPARATUS ELECTRICAL WARRANTY, TWO YEAR**

The apparatus electrical system as detailed herein shall have an electrical warranty against defects in materials and workmanship for a period of two (2) years, effective upon final payment in full by the Purchaser, and pick up or delivery of the completed apparatus to the Purchaser. Any unauthorized alterations or modifications to the electrical system shall void this warranty.

**AKRON BRASS WARRANTY**

The Akron Brass valves shall be warranted by Akron Brass for a period of ten (10) years from the date of delivery. The warranty for electronics shall be warranted by Akron Brass for a period of five (5) years from date of delivery.