

# **Specifications**



**Emanuel County Fire Rescue**

**3000 Gallon Tanker/Engine**

**2025**

**PROPOSAL SPECIFICATIONS**

The apparatus and all required components shall be compatible and are recommended for use in combination by the manufacturer. It shall be the vendor's responsibility to ensure that all components operate according to manufacturer's recommendations concerning operation speed, imposed load, etc. and to deliver a functionally complete unit, complying with good engineering and accepted commercial practice and in accordance with the intent and details of the proposal.

**ALL UNITS MUST MEET ALL NFPA REQUIREMENTS AND OSHA OR MIOSHA REGULATIONS AT TIM OF MANUFACTURE.**

**GENERAL CONSTRUCTION**

The complete apparatus, assemblies, subassemblies, component parts, etc., will be designed and constructed with due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is to be subjected when placed in service. All parts of the apparatus will be strong enough to withstand the general service under full load. The apparatus will be so designed that the various parts are readily accessible for lubrication, inspection, adjustment, and repair. The apparatus will be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between the front and rear axles, that all specified equipment, including a full complement of specified ground ladders, full water tank, loose equipment, and firefighters; will be carried without overloading or injuring the apparatus as per requirements defined in NFPA 1901.

**NFPA STANDARDS**

This unit shall comply with the NFPA standards effective at the signing of the contract, except for fire department specifications that differ from NFPA specifications. These exceptions shall be set forth in the Statement of Exceptions. Certification of slip resistance of all stepping, standing and walking surfaces shall be supplied with delivery of the apparatus. A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating.

**MANUFACTURING LOCATION**

The manufacturer shall state the location of manufacturing for the proposed apparatus including tank, body and other components.

**FAMA COMPLIANCE**

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

**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

<p>reduced cost. The use of proprietary parts may not be acceptable to the purchaser.</p> <p><b>MANUFACTURER'S DISCRETION</b></p> <p>Materials, parts, or procedures used are subject to change at manufacturer's discretion at any time to provide equal or better products.</p>		
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**COOPERATIVE PURCHASING**

The proposing manufacturer shall be pleased to allow other public agencies to use the purchase agreement resulting from this invitation to bid unless the bidder expressly notes on the proposal form that prices are not available for tag-on. The condition of such use by other agencies shall be that any such agency must make and pursue contact, purchase order/contract, and all contractual remedies with the successful bidder. Such tag-ons shall be done so that the purchaser has no responsibility for performance by either the manufacturer or the agency using the contract.

**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.

**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:

- A). Accessibility to various components that require periodic maintenance or lubrication checks.
- B). Ease of vehicle and pump operation.
- C). 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.

**PAYMENT TERMS**

Full payment for the apparatus shall be made at the 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.

**VEHICLE DELIVERY**

The finished unit shall be delivered under its own power to an address supplied by the purchaser.

**APPARATUS DIMENSIONS**

These are standard truck dimensions. Changes in configuration or additional options may affect these dimensions. The contract specification shall contain the exact dimensions.

**OVERALL HEIGHT**

The overall height shall be approx. 10 feet.

**OVERALL LENGTH**

The overall length shall be no longer than 38 feet.

**OVERALL WIDTH**

The overall width of the body shall be no more than 96.00" inches wide. The chassis mirrors will extend out past this width, but no more than 110.00".

**VERALL 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**

The angle of approach for the apparatus shall not be less than eight (8) degrees as specified by the current edition of NFPA 1901/ 1906.

**ANGLE OF DEPARTURE**

The angle of departure for the apparatus shall not be less than eight (8) degrees as specified by the current edition of NFPA 1901/ 1906.

**NFPA 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.

- A). 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.
- B). 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.
- C). The fully loaded apparatus shall be capable of obtaining a speed of 50 to 55 mph on a level concrete highway.
- D). 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.
- E). The manufacturer shall furnish copies of the transmission approval signed by the transmission manufacturer upon delivery of the chassis to the Fire Department.
- F). 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 mph at engine governed RPM.

**NFPA TOP SPEED STATEMENT**

NFPA-1901, 2016 Edition - 4.15.2. The maximum top speed of fire apparatus with a GVWR over 26,000 lbs. 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.

NFPA-1901, 2016 Edition - 4.15.3. If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1000 gallons, or the GVWR of the vehicle is over 50,000 lbs., the maximum top speed of the apparatus shall not exceed either 65 MPH or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

**CAB SAFETY SIGNS**

The following safety signs shall be provided in the cab:

A label displaying the maximum number of personnel the vehicle is designed to carry shall be visible to the driver.

“Occupants shall be seated and belted when apparatus is in motion” signs shall be visible from each seat.

“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).

A label displaying the height, length, and GVWR of the vehicle shall be visible to driver.

**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
- Cab tilt mechanism fluid (if applicable)
- 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.

**"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.

**DO NOT WEAR HELMET LABEL**

One (1) label shall be provided stating "DO NOT WEAR HELMET WHILE SEATED", and shall be visible from each seated position.

**MINIMUM CHASSIS SPECIFICATIONS**

2024 or Newer Freightliner M2 112 Commercial Chassis or

2024 or Newer Kenworth T480, Commercial Chassis

2 Door Cab

Tandem Axle Rear Suspension

Minimum of 400 HP

Engine Exhaust Brake

Allison 3000 EVS Automatic Transmission

320 Amp or Larger Alternator

Air Conditioner/Heater/Defroster

Auxiliary Engine Cooler

Minimum of 2100 CCA Battery System – 3 Batteries

<p>Passenger Side DPF with All Necessary Components</p> <p>ABS Full Brake System</p> <p>Black Powder Coated Front Bumper</p> <p>LED Engine Compartment Light</p> <p>DPF Exhaust system will be modified to extend out the right-hand rear of the unit forward of the rear axle with 9-gallon tank</p> <p>50 Black Powder Coated Aluminum Fuel Tank on</p> <p>Driver Side Mirrors-Remote Control &amp; Heated,</p> <p>West Coast Style Mud Flaps, heavy duty; Front and</p> <p>Rear, behind tires Paint Color: Red, FD Code and</p> <p>Style Power Steering</p> <p>Tilt and Telescopic Steering Wheel</p> <p>Highway Tread Front Tires and On/Off tread on rear tires</p> <p>Black Powder Coated Aluminum Wheels with Hub and Lug Nut</p> <p>Covers Two Factory Cup Holders</p> <p>Heavy Duty Black Floor Mats</p> <p>NFPA Grab Handles</p> <p>Master Battery Switch near driver's door with light</p> <p>AM/FM Radio</p> <p>Air Ride Driver Seat with Dual Arm Rests</p> <p>Mid Back Passenger Seat with Dual Arm Rests</p> <p>Cruise Control</p> <p>Electric Door Locks</p>		
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Electric Power Windows

Front and Rear NFPA Tow Hooks

**AIR HORNS**

Two (2) Emergency Tone chrome plated air horns shall be installed at the front of the vehicle. The air horns shall be mounted in full compliance of NFPA. The supply lines shall be dual 1/4" lines with equal distance from each horn. Each air horn shall be mounted, one (1) each side, on the side of the hood. Both air horns shall be controlled by a chassis manufacturer supplied lanyard.

**TIRE PRESSURE MONITORING**

The apparatus shall be provided with tire pressure indicating valve stem caps. The indicators shall be installed on each tire and be a heavy-duty design manufactured specifically for trucks. When tire is properly inflated, the indicator inside the cap shall be green, and when the tire is underinflated by 10%, the indicator inside the cap shall be red.

**FRONT HUB COVERS**

Black stainless steel hub covers shall be provided on the front axle.

**REAR HUB COVERS**

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

**COVERS, LUG NUT, PAINTED**

Black powder coated lug nut covers shall be supplied on front and rear wheels.

**CHASSIS TOW HOOKS**

The front tow hooks shall be supplied by the chassis manufacturer.

**REAR TOW PLATES**

Two (2) rear tow plates with 1-1/2" I.D. holes, constructed with 1" steel plate shall be provided on the apparatus. These shall be located below the apparatus body and fastened to the rear chassis frame rails. The tow plates shall be painted red.

**FRONT MUD FLAPS**

A pair of black rubber mud flaps shall be provided and installed behind the front wheels by the chassis manufacturer.

**REAR MUD FLAPS**

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

### VEHICLE DATA RECORDER

Vehicle shall be equipped with a vehicle data recorder to meet NFPA 2016 edition Standards, with access to recorder in cab. The (VDR) shall be an on-board Vehicle Data Recorder installed in the chassis cab to collect essential information in order to assist in the training and safety efforts of the department. It shall be capable of recording 100 engine-hours' worth of minute by minute information. The VDR shall be capable of recording the following data at least once per second:

- Vehicle Speed (mph)
- Acceleration (mph/sec)
- Deceleration (mph/sec)
- Engine Speed (RPM)
- Engine Throttle Position (% of Full Throttle)
- Anti-Lock Braking System (On/Off)
- Seat Occupied Status (Occupied: Yes/No by Position)
- Seat Belt Status (Buckled: Yes/No by Position)
- Master Optical Warning Device Switch (On/Off)
- Time (24 Hour Clock)
- Date (Year/Month/Day)

All data stored in the VDR shall be up loadable by the user to a computer and importable into a data management software package. Data shall be password protected with access controlled by the purchaser.

Software shall be delivered with the apparatus that will run on both Windows® and Apple® operating systems and produce the following formatted reports from the uploaded data:

- Raw second-by-second data over a specified data/time range
- Daily log for the time the engine is running for a given date (minute-by-minute output of all values)
- Weekly summary (maximum values each hour for each day of the week)
- Monthly summary (maximum values each day for each day of the month)

### SEAT BELT WARNING SYSTEM

There shall be a seat belt indicator system supplied in the cab. The indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

A display panel shall be supplied in the dash area. The panel shall have an audible indicator and a red light display to indicate that a seat belt has not been fastened.

### VEHICLE DATA RECORDER DOWNLOAD HARNESS

A USB VDR download harness shall be supplied with the system to allow the data to be downloaded to a computer.

**CENTER CONSOLE**

There shall be a custom-built center console furnished and shall be located between the driver and officer's seats. The top face of the console shall be designed as the switch panel for all emergency light switches. The console shall be coated with Black Zolotone for glare free finish.

**RADIO MOUNTING PROVISION**

A cut out and faceplate for a radio head shall be provided and installed in the console. Install customer supplied radio and antenna

**KEYLESS IGNITION SWITCH**

One (1) non-removable, keyless style ignition switch shall be provided with the chassis.

**MASTER BATTERY SWITCH**

A master battery switch shall be provided as detailed in the chassis specifications.

**BACK-UP ALARM**

One (1) 97 DB back up alarm shall be provided and installed at the rear of the unit. It shall be wired to activate when the transmission is placed in reverse.

**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.

**MIDSHIP FIRE PUMP DRIVESHAFTS AND INSTALLATION**

The midship PTO 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.

**1000 GPM FIRE PUMP SPECIFICATIONS**

The centrifugal type fire pump shall be with a rated minimum capacity of 1000 GPM. The pump shall meet NFPA 1901 requirements.

**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.

## GEARBOX

The gearbox shall be manufactured and tested at the pump manufacturer's factory. Pump gearbox shall be of sufficient size to withstand the torque of the engine in pump operating conditions. 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 shall withstand the full torque of the engine and pump operating conditions.

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 helical design shall be provided. (No exceptions.)

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

## FIVE YEAR FIRE PUMP WARRANTY

A five (5) year warranty for the fire pump shall be provided.

## 6.00" LEFT SIDE INLET

One (1) 6.00" suction steamer inlet with male NH threads shall be provided, on the left side pump panel. The inlet shall have a removable screen.

## INTAKE TRIM RING WITH WARNING LABEL - BURGUNDY

An Innovative Controls chrome plated molded plastic trim ring shall be installed for the pump intake. A warning label shall be installed on the bezel, that states the following: "WARNING: Do not supply inlet with a pressurized source when valve is closed. Serious injury or death can result."

## 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.

## 6.00" RIGHT SIDE INLET

One (1) 6.00" suction steamer inlet with male NH threads shall be provided, on the right side pump panel. The inlet shall have a removable screen.

**INTAKE TRIM RING WITH WARNING LABEL - BURGUNDY**

An Innovative Controls chrome plated molded plastic trim ring shall be installed for the pump intake. A warning label shall be installed on the bezel, that states the following: "WARNING: Do not supply inlet with a pressurized source when valve is closed. Serious injury or death can result."

**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.

**PUMP SHIFT – PTO**

One (1) PTO shall be installed to drive the fire pump. An electrically activated switch shall be installed in the cab to engage the fire pump. The switch shall be located on the driver side and accessible from the ground level.

**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. The flexible piping shall be black SBR synthetic rubber hose with 300 working pounds and 1200 pounds burst pressure for sizes 1.5 through 4". Sizes ¾", 1" and 5" are rated at 250 pound working and 1,000 pound burst pressure. All sizes are rated at 30 HG vacuum. Reinforcement consists of two (2) plies of high tensile strength tire cord for all sizes and helix wire installed in sizes 1 through 5" for maximum performance in tight bend applications. The material has a temperature rating of -40 degrees F to 210 degrees F. Full flow couplings are precision machined from high tensile strength stainless steel. All female couplings are brass. ¾" and 1" male and Victaulic couplings are brass.

**PLUMBING SYSTEM**

The plumbing system shall be left unpainted by the apparatus manufacturer.

**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.

**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.

**PRIMING PUMP**

The priming pump shall be a positive displacement, oil-less rotary vane electric motor driven pump conforming to NFPA-1901 rated performance requirements. The pump body shall be manufactured of heat-treated anodized aluminum for wear and corrosion resistance. The pump shall be capable of producing a minimum of 24 Hg vacuum at 2,000 feet (609.6m) above sea level. The electric motor shall be a 12 VDC totally enclosed unit. The priming pump shall not require lubrication. The priming pump shall operate by a single pull control valve mounted on the pump operator's panel. The control valve shall be manufactured of bronze construction.

#### U.L. TEST POINTS

Two (2) U.L. test plugs shall be mounted on the pump panel for testing of the vacuum and pressures.

#### MASTER PUMP DRAIN

A rotary type, 12 port master drain valve shall be provided and controlled at the lower portion of the side pump panel. The valve shall be located in pump compartment lower than the main body and connected in such a manner as to allow complete water drainage of the pump body and all required accessories. Water shall be drained below the apparatus body and away from the pump operator.

#### TOTAL PRESSURE GOVERNOR (TPG)

Apparatus shall be equipped with a Class 1 "Total Pressure Governor" (TPG) that is connected to the Electronic Control Module (ECM) mounted on the engine. The "TPG" will operate as a pressure sensor (regulating) governor (PSG) utilizing the engine's J1939 datalink for optimal resolution and response provided that J1939 is supported by the engine manufacturer. If J-1939 engine control is not supported, then analog remote throttle control shall be provided by the TPG, subject to J1939 RPM data availability. The TPG shall utilize control algorithms that minimize pressure spikes during low or erratic water supply situations and display operational status messages to the operator under certain circumstances. The TPG shall be backwards compatible to any engine that supplies J1939 RPM, Temperature and Oil Pressure information providing the ability to maintain consistent fleet fire-fighting capability. TPG shall incorporate the ability to use either a 300 PSI or a 600 PSI transducer for best operation. PSG system diagnostics shall be built in and accessible by service technicians. Programmable presets for RPM and Pressure settings shall be easily configurable. The TPG shall incorporate configurable parameters in the menu structure accessed through a diagnostic password. The "TPG" shall also include indication of engine RPM, system voltage, engine oil pressure and engine temperature with audible alarm output for all. The "TPG" uses the J1939 data bus for engine information, requiring no additional sensors to be installed. The TPG shall use J1939 broadcast warnings for the alarm points as a standard.

#### AUXILARY INTAKE- 2.50" - LEFT SIDE

One (1) 2.50" intake valve shall be installed on the left pump panel with the valve body mounted behind the pump panel. The suction shall terminate with a 2.50" female NST chrome inlet swivel, and a brass inlet strainer. The valve shall be a two and one half-inch (2.50") valve with a stainless ball. The intake valve shall be manually operated with a swing-type manual control located adjacent the intake. There shall be an Innovative Controls 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color-coded bezel shall be included. One (1) 2.50" chrome plated plug shall be provided. The threads shall be NST and the plug shall be equipped rocker lugs and chain.

#### AUXILARY INTAKE- 2.50" - RIGHT SIDE

One (1) 2.50" intake valve shall be installed on the left pump panel with the valve body mounted behind the pump panel. The suction shall terminate with a 2.50" female NST chrome inlet swivel, and a brass inlet strainer. The valve shall be a two and one half-inch (2.50") valve with a stainless ball. The intake valve shall be manually operated with a swing-type manual control located adjacent the intake. There shall be an Innovative Controls 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color-coded bezel shall be included. One (1) 2.50" chrome plated plug shall be provided. The threads shall be NST and the plug shall be equipped rocker lugs and chain.

#### TANK TO PUMP LINE

One (1) 4.00" tank to pump line shall be provided for connection between the water tank and the fire pump. The valve shall be a four-inch (4.00") with a stainless-steel ball. The quarter turn valve shall be manually operated with a locking push/pull "T" handle located on the left-hand side pump operator's panel.

#### TANK FILL/ RECIRULATION LINE

One (1) 2.00" fire pump to water tank refill and pump bypass cooler line shall be provided. The valve shall be a full flow quarter turn ball valve with 2.00" piping and flex hose to tank. A 2.00" Valve shall be provided between the pump discharge manifold and the water tank. The valve shall have an all stainless-steel body with a stainless ball. The quarter turn valve shall be manually operated with a locking push/pull "T" handle located on the left-hand side pump operator's panel.

#### LEFT SIDE PANEL DISCHARGE

Two (2) 2.50" discharge with valve shall be located on the left side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2.50" outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2.50" MNST threads. The valve shall be a two and one half-inch (2.50") valve with a stainless ball. The

quarter turn valve shall be manually operated with a locking push/pull "T" handle located on the left-hand side pump operator's panel.

Two (2) 2.50" Class 1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters.

There shall be an Innovative Controls 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color-coded bezel shall be included.

Two (2) 2.50" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped rocker lugs and chain.

#### RIGHT SIDE PANEL DISCHARGE

Two (2) 2.50" discharge with valve shall be located on the right-side panel. The valve shall be a quarter turn ball type and fixed pivot design to allow easy operation at all pump pressures. The 2.50" outlet shall be equipped with an integral, stainless steel, 30-degree elbow terminating with 2.50" MNST threads.

The valve shall be a two and one half-inch (2.50") valve with a stainless ball. The quarter turn valve shall be manually operated with a locking push/pull "T" handle located on the left-hand side pump operator's panel.

Two (2) 2.50" Class 1 discharge pressure gauge (0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. There shall be an Innovative Controls 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color-coded bezel shall be included. Two (2) 2.50" chrome plated cap shall be provided. The threads shall be NST and the cap shall be equipped 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. 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. The pre-connect shall terminate in a stainless-steel swivel with 1.50" NST threads. The swivel shall allow the hose to be pulled from either side of the apparatus. The

valve shall be a two-inch (2.00") valve with a stainless ball. The quarter turn valve shall be manually operated with a locking push/pull "T" handle located on the left-hand side pump operator's panel. There shall be an Class1 model 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color-coded bezel shall be included.

One (1) 2.50" Class1 discharge pressure gauge (30"-0-400 PSI) shall be provided. The face of the gauge shall be a WHITE dial with black letters. The gauge will be located on the pump instrument panel. A chrome bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. Crosslay discharge #1 shall have the capacity to hold 200 feet of 1.75" fire hose and nozzle.

#### 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. 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. The pre-connect shall terminate in a stainless-steel swivel with 1.50" NST threads. The swivel shall allow the hose to be pulled from either side of the apparatus. The valve shall be a two-inch (2.00") valve with a stainless ball. The quarter turn valve shall be manually operated with a locking push/pull "T" handle located on the left-hand side pump operator's panel.

There shall be a Class1 model 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color-coded bezel shall be included.

One (1) 2.50" Class1 discharge pressure gauge (30"-0-400 PSI) shall be provided. The face of the gauge shall be a YELLOW dial with black letters. The gauge will be located on the pump instrument panel. A chrome bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. Crosslay discharge #2 shall have the capacity to hold 200 feet of 1.75" fire hose and nozzle.

#### CROSSLAY PRE-CONNECT FRONT BUMPER DISCHARGE #3

One (1) 1.75" crosslay pre-connect shall be installed in the pump module located in the front bumper. The crosslay shall be plumbed using 2.00" stainless steel pipe, and/or flexible piping. The crosslay 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. The pre-connect shall terminate in a stainless-steel swivel with 1.50" NST threads. The swivel shall allow the hose to be pulled from either side of the apparatus. The valve shall be a two-inch (2.00") valve with a stainless ball. The quarter turn valve shall be manually operated with a locking push/pull "T" handle located on the left-hand side pump operator's

panel.

There shall be a Class1 model 0.75" quarter turn drain valve included. The drain valve shall be connected to the valve with flexible hose that is routed in such a manner as to assure complete drainage to below the apparatus. A matching color-coded bezel shall be included.

One (1) 2.50" Class1 discharge pressure gauge (30"-0-400 PSI) shall be provided. The face of the gauge shall be a GREEN dial with black letters. The gauge will be located on the pump instrument panel. A chrome bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage. Crosslay discharge #3 shall have the capacity to hold 200 feet of 1.75" fire hose and nozzle.

#### CROSSLAY #4, HOSEBED ("DEADLAY")

One (1) crosslay style "deadlay" hosebed shall be installed above the pump. The deadlay shall have the capacity to hold 250 feet of 2.50" fire hose and nozzle.

#### CROSSLAY HOSEBED

The crosslays shall be arranged on top of the pump module with the #1 crosslay toward the front of the pump house and the #2 crosslay immediately behind the first, and the #4 crosslay at the rear of the module.

#### REEL HOSE

A reel hose shall be installed on the apparatus with a minimum of 150ft of hose capacity.

#### VINYL CROSSLAY COVER

The crosslays shall be equipped with a heavy duty 18 oz. vinyl cover with side flaps. The top portion will be fastened to the pump house with Snap type fasteners on the side and top. The vinyl cover shall be red in color.

#### DECK GUN

A Deck gun shall be installed and furnished on the top of the apparatus on with a remote control for ground operation of the deck gun.

#### PRESSURE GAUGES

Each line pressure gauge shall be mounted immediately near the control for the corresponding valve. The individual line pressure gauges for the discharges shall be 2.50" in diameter with white dial face gauges with black lettering and markings. The gauges shall be a compound style gauge with a vacuum/pressure range of 0 to +400 psi. The gauges shall be fluid filled with pulse and vibration dampening Interlube to lubricate the internal mechanisms to prevent lens condensation and to ensure proper operation to -40° F. The cases shall be temperature compensated with an internal breathing diaphragm to permit fully filled cases and to allow a rigid lens with a distortion free viewing area. The gauge accuracy for the gauge shall be plus or minus 2% mid-scale, plus or minus

3% balance, per ANSI B40.1, Grade 1A. To prevent internal freezing and to keep contaminants from entering the gauge, the stem and bourdon tube shall be filled with low temperature oil and be sealed from the water system using an isolating diaphragm located in the stem. A bright metal bezel shall be supplied for resistance to corrosion and to protect the lens and case from damage.

#### WATER TANK GAUGE

A Class 1 water tank level gauge shall be installed on pump panel. The tank level gauge shall indicate the liquid level on an easy to read LED display and show increments of 1/8 tank. A pressure transducer shall be mounted on the outside of the tank in an easily accessible area.

#### LARGE LIGHT WATER LEVEL GAUGE, REAR OF BODY

One (1) large light water level gauge system shall be provided on the rear of the body. The Whelen model PSTANK2, LED strip light shall be surface mounted. The strip light shall be mounted as to indicate the following water levels:

- Green LED cluster Full tank
- Blue LED cluster 3/4 tank
- Amber LED cluster 1/2 tank
- Red LED cluster 1/4 tank

The red LED's shall burn steady to indicate 1/4 tank and shall start to flash when the water level drops below 1/4 tank.

#### SIDE DESIGN PUMP OPERATOR'S PANEL & MODULE

A pump operator's side panel pump module shall be provided. It shall be assembled and mounted independently from both the chassis and the body, to allow sufficient flexing and prevent component fatigue. The module shall be constructed using square steel tubing. The welded ends of the tubing shall be chamfered prior to welding and shall be ground smooth prior to finishing. The exterior module shall be sanded, prepped, and primed using paint manufacturer's recommendations. The module structure shall be finish painted to match the body and chassis cab. A heavy-duty rubber isolation material shall be provided between dissimilar metals during the mounting process. The substructure and extrusions shall be painted and undercoated before bolting to the chassis frame.

#### GAUGE PANEL

The pump operator's upper gauge panel shall be located on the left-hand side of the pump module above the main control panel. It shall be vertically hinged and shall have two (2) latches.

#### LEFT SIDE PUMP PANEL

The pump panel installed on the left-hand side of the pump enclosure shall be fastened to the pump enclosure with stainless steel bolts.

#### **RIGHT SIDE PUMP PANEL**

The pump panel installed on the on the right-hand side of the pump enclosure shall be fully removable without the use of hand tools.

#### **PUMP PANEL LIGHT SHIELD LEFT**

One (1) extruded aluminum light shield assembly shall be provided above the left side pump panel area. One (1) waterproof strip light with 72 LEDs shall be installed within the shield. The light(s) shall be 23.80" in length, have a clear acrylic lens, aluminum housing, and have a minimum effective output of 950 lumens.

#### **PUMP PANEL LIGHT SHIELD RIGHT**

One (1) extruded aluminum light shield assembly shall be provided above the right-side pump panel area. One (1) waterproof strip light with 72 LEDs shall be installed within the shield. The light(s) shall be 23.80" in length, have a clear acrylic lens, aluminum housing, and have a minimum effective output of 950 lumens. A weather resistant switch, located on the pump operator's panel shall be provided to activate the lights.

#### **PUMP COMPARTMENT LIGHTS**

Two (2) LED lights shall be provided inside the pump compartment area. The dimensions of the lights shall be 1.00" x 3.00". Each light shall operate at 12 volts DC, generate 120 lumens, and shall be mounted on an adjustable bail mount bracket. The lights shall function with the switch for pump operator's gauge panel lights.

#### **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 tread plate. It shall be a minimum of approximately 11" deep x the width of the side panel 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" downward bend on the front and side faces with a 1" 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 tread plate. It shall be a minimum of approximately 11" deep x the width of the side panel 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" downward bend on the front and side faces with a 1" underside return for superior strength.

#### **FRONT PUMP HOUSE ENCLOSURE**

The front of the pump enclosure shall be enclosed with .08" bright aluminum tread plate.

#### WARNING - PUMP OPERATOR

A warning plate shall be installed on the pump operator's panel that states the following: WARNING: Death or serious injury might occur if proper operating procedures are not followed. The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics hazards and component limitations.

#### 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.

#### PUMP PANEL COLOR TRIM PANELS

Innovative Controls intake and discharge trim rings shall be installed to the apparatus with mounting bolts. These bezel assemblies will be used to identify intake and discharge ports with color and verbiage. These trim rings are designed and manufactured to withstand the specified apparatus service environment and shall be backed by a warranty equal to that of the exterior paint and finish. The specified assemblies feature a chrome-plated panel-mount bezel with durable UV resistant polycarbonate inserts. These UV resistant polycarbonate graphic inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. All insert labels shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

#### WATER TANK

The tank will be 3000 gallons in water capacity and be compliant with current NFPA requirements. The tank will have a minimum of 3/4" thick floor and 3/4" sidewalls and top. This material will be non-corrosive stress relieved thermoplastic, and U.V. stabilized, for maximum protection. The tank will be of a special configuration and is so designed to be completely independent of the body and compartments.

All exterior tank joints and seems will be tested for maximum strength and integrity. The top of the tank is fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removability.

The transverse and longitudinal swash partitions will be manufactured of 1/2" polypropylene material. All partitions will be equipped with vent and air holes to

permit movement of air and water between compartments. The partitions will be designed to provide maximum water flow and meet NFPA rules. All swash partitions interlock with one another and are welded to each other as well as to the walls and floor of the tank.

#### BAFFLES

The tank will be provided with proper splash baffles according to the latest edition of NFPA Pamphlet 1901. All baffles will be installed using a unique method of inter-locking. All baffling shall be constructed of a minimum of ½” poly material.

#### MOUNTING

There will be a heavy-duty rubber cushion between the tank sub frame and the tank to absorb road shock and normal chassis torsion. There shall also be frame mounted brackets with spring assist for softening riding of tank.

#### WATER FILL TOWER AND COVER

The tank shall have a combination vent and manual anti-surge fill tower. The fill tower shall be constructed of 0.50" polypropylene and shall be a minimum dimension of 10.00" x 10.00" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. 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. The fill tower shall have an anti-surge provision. It shall be designed to prevent water splashing up through the top of the fill tower when the water tank is full and the apparatus comes to an immediate stop.

#### 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.

#### WATER TANK CLEAN-OUT PLUG

The tank shall have a 3.00" N.P.T. threaded outlet on the bottom for a cleanout/drain plug per NFPA. The cleanout/ drain plug shall be installed in the bottom of the water tank using a flange with a 3.00" N.P.T. threaded outlet to create easy access to the plug.

#### OUTLETS

In addition to the tank suction valve outlet located in the sump, there will be an outlet provided for the tank fill valve.

#### 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 G.P.M. The addition of rear suction fittings, nurse valve fittings, dump valve fittings, and through-the-tank sleeves to accommodate rear discharge piping must be specified. All auxiliary outlets and inlets must meet all NFPA guidelines in effect at the time of manufacture.

#### **MOUNTING BLOCKS**

There will be four (4) mounting blocks, two (2) on each side for mounting equipment such as ladder brackets. A 1.00" mounting block shall cover the whole rear of tank for mounting work lights, folding steps, grab rails, accessories and emergency lighting.

#### **HOSE BED**

There shall be a hose bed area constructed of polypropylene on the top of the water tank consisting of two (2) side walls and one (1) front panel. The hose bed shall be welded to the outside perimeter of the tank cover, and shall be approximately 12.00" tall by the length and width of the water tank. The hose bed shall be free from all projections, which may interfere with the unloading of hose.

#### **HOSE BED DIVIDER**

There shall be 2 hose bed dividers installed with this apparatus.

#### **HOSEBED FLOOR**

The floor of the hose bed shall be grooved by the tank manufacturer to provide an integral planking designed to allow the loaded hose to drain and allow airflow for ventilation.

#### **VINYL HOSEBED COVER**

The apparatus shall be equipped with an 18-oz. vinyl Hosebed cover with a hook and bungee fastening system at front, rear and sides. The vinyl material shall be treated for protection against UV rays and mildew. The vinyl cover shall be red in color.

#### **DUMP VALVE- MANUAL**

One (1) Newton 10" Model 1050 dump valve shall be installed. It shall be located at the rear center of the apparatus. The dump valve shall be controlled by a manual handle and locking device on the top of the valve. The dump valve shall be stainless to match the apparatus body with polyurethane paint that is color matched.

#### **DIRECT TANK FILL, RIGHT HAND SIDE**

There shall be a one (1) 3" direct tank fill located on the right-rear of the apparatus. The valve shall be an Akron Brass 8800 series swing out valve. This

valve shall be operated using a direct manual actuator handle. The manual actuator shall require only 90° travel and be quickly adjustable to one of eight positions. Valve inlet shall be a 2.50" female NST and feature a 30-degree droop with a wire screen inlet strainer and a polished chrome swivel. The inlet shall be able to be controlled from the rear of the apparatus while standing at ground level. One (1) 2.50" chrome plated plug shall be provided. The threads shall be NST and the plug shall be equipped rocker lugs and chain.

#### DIRECT TANK FILL, LEFT HAND SIDE

There shall be a one (1) 3" direct tank fill located on the left-rear of the apparatus. The valve shall be an Akron Brass 8800 series swing out valve. This valve shall be operated using a direct manual actuator handle. The manual actuator shall require only 90° travel and be quickly adjustable to one of eight positions. Valve inlet shall be a 2.50" female NST and feature a 30-degree droop with a wire screen inlet strainer and a polished chrome swivel. The inlet shall be able to be controlled from the rear of the apparatus while standing at ground level. One (1) 2.50" chrome plated plug shall be provided. The threads shall be NST and the plug shall be equipped rocker lugs and chain.

#### SUBFRAME

The sub frame shall be constructed from Aluminum tubing and angle, welded together and bolted to the chassis frame. The main support shall be constructed of 3" x 3" x 1/4" Aluminum tubing running the full length of the sub-frame with 3" x 3" x 1/4" Aluminum tubing and 3"x 3" x 1/4" Aluminum angle cross supports. The subframe main supports shall run the full length of the chassis frame and be mounted to the chassis frame using 0.1875" angle clips and a minimum of ten (10) grade 8 bolts. The tank sub frame and attachments shall be in strict compliance with poly-tank engineering specifications.

#### MOUNTING

The tank shall rest on the sub-frame as to not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches the sub-frame shall be designed to allow for not more than 400 square inches of unsupported area. The tank shall be supported to prevent itself from shifting during vehicle operation. A non-corrosive protective liner shall be installed in between the tank and the sub-frame. The tank shall be mounted to sub frame with a minimum of ten (10) grade 8 bolts through Aluminum angle clips in accordance with poly-tank engineering specifications.

#### BODY WARRANTY

The apparatus body including the sub-frame, floors, walls, etc. shall all carry a Lifetime Warranty from the Apparatus builder. NO EXCEPTIONS

#### BODY CONSTRUCTION

The body shall be fabricated of smooth Aluminum plate and aluminum tread plate. The sub-frame shall be designed as structural-framing members with the

smooth aluminum and tread plate fabricated to form compartments, floors and fender panels. The side compartments shall cut from flat sheet and folded to form compartment panels. These panels shall be welded to the sub-frame and each other and form completed compartments for maximum rigidity. The compartments shall have a minimum of one (1) set of ventilation holes on each compartment side wall to provide the proper airflow inside the compartment and to prevent water from dripping into the compartment. These ventilation holes shall be formed into the compartment side plate and not added to the compartment as a separate plate. The side compartments shall be constructed of formed 1/8" Aluminum smooth plate. The truck shall have high side compartments.

#### COMPARTMENT FLOORS

The side compartment floors shall be constructed of 3/16" smooth Aluminum. The side compartment floors shall have a sweep out design for easy cleaning.

#### 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 99.00" wide.

#### FENDER PANELS

The side fender panels above the rear wheels shall be constructed of 0.125" black powder coated aluminum diamond plate. The rear wheel wells shall be circular cut and trimmed with a fenderette for a streamlined appearance. The compartments and fenders, together forming the body, shall be painted the same color as the chassis. All seams on the frame side of the body shall be welded or caulked to prevent moisture from entering the compartments.

DOOR HANDLES Each compartment shall have a 6.00", D-Paddle handle with lock.

LEFT SIDE COMPARTMENT IN FRONT OF REAR WHEELS, L-1 One (1) compartment shall be supplied on the left hand side of the truck in front of the rear wheels. The compartment shall be equipped with a low double hinged door. Compartment dimensions shall be approx. 60.00" wide by 26.00" deep by 27.00" high. Door compartments shall have two (2) vertically hinged doors closing towards the center of the compartment. The exterior of the door shall have a wet paint finish to be painted to match the apparatus body.

#### COMPARTMENT LIGHT(S)

One (1) surface mount LED light(s) shall be installed in the compartment. The light(s) shall have a clear lens and shall a minimum effective output of 810 lumens. The lights shall function independently of other compartments by an automatic "On-Off" switch located on each compartment door.

**LEFT SIDE COMPARTMENT BEHIND REAR WHEELS**

One (1) compartment shall be supplied on the left-hand side of the truck behind the rear wheels. Compartment dimensions shall be approx. 24.00” wide by 26.00” deep by 27.00” high. Door compartments shall have one (1) vertically hinged door closing towards the rear of the apparatus. The exterior of the door shall have a wet paint finish to be painted to match the apparatus body.

**COMPARTMENT LIGHT(S)**

One (1) surface mount LED light(s) shall be installed in the compartment. The light(s) shall have a clear lens and shall a minimum effective output of 810 lumens. The lights shall function independently of other compartments by an automatic "On-Off" switch located on each compartment door.

**RIGHT SIDE COMPARTMENT IN FRONT OF REAR WHEELS, R-1** One (1) compartment shall be supplied on the right-hand side of the truck in front of the rear wheels. Compartment dimensions shall be approx. 60.00” wide by 26.00” deep by 27.00” high. Door compartments shall have two (2) vertically hinged doors closing towards the center of the compartment. The exterior of the door shall have a wet paint finish to be painted to match the apparatus body.

**COMPARTMENT LIGHT(S)**

One (1) surface mount LED light(s) shall be installed in the compartment. The light(s) shall have a clear lens and shall a minimum effective output of 810 lumens. The lights shall function independently of other compartments by an automatic "On-Off" switch located on each compartment door.

**RIGHT SIDE COMPARTMENT BEHIND REAR WHEELS**

One (1) compartment shall be supplied on the right-hand side of the truck behind the rear wheels. Compartment dimensions shall be approx. 24.00” wide by 26.00” deep by 27.00” high. Door compartments shall have one (1) vertically hinged door closing towards the rear of the apparatus. The exterior of the door shall have a wet paint finish to be painted to match the apparatus body.

**COMPARTMENT LIGHT(S)**

One (1) surface mount LED light(s) shall be installed in the compartment. The light(s) shall have a clear lens and shall a minimum effective output of 810 lumens. The lights shall function independently of other compartments by an automatic "On-Off" switch located on each compartment door.

**DROP TANK STORAGE- LH SIDE**

There shall be room to store an appropriate size dump tank under the left-hand side “T” portion of the tank. The area shall be fully enclosed painted to match apparatus and to lock the dump tank and protect dump tank in place while the apparatus is in motion. The tank shall slide in horizontally into the hold from the right-side rear of the body and there shall be poly stripping provided in the floor of slide to prevent

metal to metal contact.

The storage shall have the capacity for one (1) 3000 US Gallon portable tank with an aluminum frame (**Drop Tank Included**).

#### HARD SUCTION STORAGE- RH SIDE

There shall be a hard-suction storage tray located under the right-hand side of the "T" portion of the tank. The hard-suction hose storage shall be accessed from the ground at the rear of the unit. Two (2) troughs shall be provided in the storage area for the hose to slide on and be held in position when stored. The area shall be fully enclosed with aluminum diamond plate to lock the suction hose and protect suction hose in place while the apparatus is in motion. The suction storage shall have capacity for two (2) 10' sections of hard suction hose.

**SCBA BOTTLE COMPARTMENTS** Two (2) SCBA bottle compartments shall be installed, one (1) in front of the front axle wheel well area on the left and right side of the apparatus. The compartments shall be constructed of an 8.00" diameter plastic polymer. The compartments shall allow the storage of two (2) cylinders each up to 7.75" in diameter. Each shall have a Cast Products door assembly.

**FIRE EXTINGUISHER/WATER CAN COMPARTMENTS** Two (2) Fire extinguisher/water can bottle compartments shall be installed, one (1) in between the rear axles wheel well area on the left and right side of the apparatus. The compartments shall be constructed of an 8.00" diameter plastic polymer. The compartments shall allow the storage of one (1) 20 lb fire extinguisher or water can. Each shall have a Cast Products door assembly.

**SCBA AIR PACK COMPARTMENTS** Two (2) SCBA bottle compartments shall be installed behind the rear axle wheel well area on the left and right side of the apparatus. The compartments shall be constructed of plastic polymer. The compartments shall allow the storage of two (2) SCBA air pack assemblies. There shall also be a divider in between the air packs. Each shall have a Cast Products door assembly. The compartments shall allow the storage of a total of four (4) SCBA air pack assemblies.

#### REAR TAILBOARD

There shall be a 12" rear tailboard constructed of polished aluminum running the full width of the rear of apparatus. Tailboard shall be bolted to rear of body with high grade stainless fasteners. The tailboard shall be constructed of polished aluminum diamond plate with NFPA approved knurled finish for skid resistance.

#### STEPS

All steps shall have a surface area of at least 35 square inches and shall be able to withstand a load of at least 500 pounds.

**REAR MOUNTED LADDER**

There shall be a rear mounted ladder heavy duty chrome folding furnished and located, at the rear of the apparatus for hose bed access. The ladder shall be lighted and it shall be acceptable for manufacturer logo.

**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.

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**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.

**FOLDING ATTIC LADDER**

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

**LADDER STORAGE – RH SIDE**

Ladder storage shall be either over the top configuration on a lowering system, through the tank type system, or mounted on a rail.

**FRONT OF BODY FOLDING STEPS- RIGHT**

Four (4) or More large, heavy duty chrome folding steps shall be furnished and located, at the right-hand front of the body. The exact number of steps provided may vary depending upon body configuration and options.

**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. All railing escutcheons and brackets shall be chrome plated, and shall be bolted to the body with stainless steel bolts. The rails shall comply with NFPA 1901. The handrails shall be mounted as follows:

Two (2) extruded aluminum non-slip handrails, approximately 30.00" in length, shall be provided and vertically mounted on the rear of the apparatus, one (1) on each side of the body.

One (1) extruded aluminum non-slip handrail, approximately 42.00" in length, shall be provided and horizontally mounted on the rear of the apparatus, below hose bed

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

<p>One (1) extruded aluminum non-slip handrail shall be provided and horizontally mounted on the front, upper, left hand side of the body.</p>		
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**12 VOLT BODY ELECTRICAL SYSTEM**

**HARDWIRED AND NON-MULTIPLEX-NO EXCEPTIONS**

The entire apparatus body shall be hard wired to provide ease of maintenance and trouble shooting. No multiplex systems shall be used or provided. All electrical lines in the body shall be protected by automatic circuit breakers, conveniently located to permit ease of service. Flashers, heavy solenoids and other major electrical controls shall be located in a central area near the circuit breakers. All lines shall be color coded and easy to identify, oversized for the intended loads and installed in accordance with a detailed diagram. A complete wiring diagram shall be supplied with the apparatus. Wiring shall be carefully protected from weather elements and snagging. Heavy duty loom shall be used for the entire length. Grommets shall be utilized where wiring passes through panels. In order to minimize the risk of heat damage, wires run in the engine compartment area shall be carefully installed and suitably protected by the installation of heat resistant shielded loom. All electrical equipment shall be installed to conform to the latest federal standards as outlined in NFPA 1901.

There shall be no exceptions to this requirement.

**WHELEN 295 SDA SIREN AND SPEAKER**

There shall be one (1) Whelen 295 SDA full feature siren provided in the cab center console. There shall be a microphone hardwired to the unit for the PA function. The siren head shall have all emergency controls embedded in siren face including three position activation switch and eight individual switches. The siren shall have the following available tones: Tone off, Wail, Phased wail, Wail 2, Yelp, Phased Yelp, Yelp 2, Yelp 249, Piercer, Hi lo, Mechanical, Phased Mechanical, Mechanical 2, Warble, Phased Warble, Woop, Phased Woop, Wail Yelp combo, Wail Yelp Combo 2.

**ELECTRONIC SIREN SPEAKER**

One (1) Whelen 100-watt speaker shall be flush mounted as far forward and as low as possible on the front of the vehicle. The speaker shall produce a minimum sound output of 120 dB at 10 feet to meet current NFPA 1901 requirements. The speaker shall be located on the right-hand side behind the bumper

#### CAB PERIMETER SCENE LIGHTS

There shall be two (2) Techniq E-100 white LED lights with grommets provided, one (1) for each cab door.

#### PUMP HOUSE PERIMETER LIGHTS

There shall be two (2) Techniq E-100, white LED lights with grommets provided under the pump panel panels, one (1) each side.

#### BODY PERIMETER SCENE LIGHTS

There shall be two (2) Techniq E-100, white LED lights with grommets provided under at the rear step area of the body, one (1) each side shining to the rear.

#### GROUND LIGHT SWITCHING

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

#### HAZARD LIGHT

A flashing red LED light, located in the driving compartment, shall be illuminated automatically whenever any compartment door is ajar. The hazard light shall be marked with a sign that reads "Do Not Move Apparatus When Light is On". The warning light shall be interlocked to the parking brake and shall only alert the driver when the parking brake is released. The light shall also be used to signal that other ancillary equipment such as racks light towers etc. are not in their "ready for transport" position.

#### 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.

#### REAR FMVSS LIGHTING LED TAILLIGHTS

Two (2) Technic model 60 series LED (Light Emitting Diode) lights with one (1) Technic 60 series LED light shall be installed in a vertical position each side at rear and wired with weatherproof connectors.

Light functions shall be as follows:

- LED red running light with red brake light in upper position.
- LED amber populated arrow pattern turn signal in middle position.
- LED clear back-up light in lower position.

#### MIDSHIP TURN SIGNAL

There shall be a midship turn signal mounted on each side of the apparatus.

#### 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.

#### NFPA AUDIBLE AND LIGHTING WARNING PACKAGE

The following warning light package shall include all of the minimum warning light and actuation requirements for the current revision of the NFPA 1901-2016. The lighting as specified shall meet the requirements for both "Clearing Right of Way" and "Blocking Right of Way" which includes disabling all white warning lights when the apparatus is in "Blocking Right of Way" mode.

#### WARNING PACKAGE ACTUATION CONTROLS

The entire warning light package shall be actuated with-in the Whelen 295 SDA head via three position switches. The wiring for the warning light package shall engage all of the lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic control system shall be provided to switch the warning lights to the "Blocking Right of Way" mode when the vehicle parking brake is engaged.

#### LIGHTBAR

One (1) Whelen 55.00" or longer LED lightbar shall be supplied and mounted. The lightbar shall have clear lenses and contain the following modules:

- Four (4) RED LED modules, two (2) on each corner.
- Four (4) RED LED modules, across the front
- Two (2) WHITE LED modules, on the front

The forward facing white lights shall be automatically disabled for the "Blocking Right of Way" mode.

#### LIGHT BAR SWITCH

The light bar shall be controlled through the three-position slide switch in the Whelen 295.

#### LED REAR BEACONS

Two (2) Whelen model L31 LED beacons shall be provided and installed at the upper rear corners of the apparatus. The beacon on the left-hand side shall be red in color with a red lens. The beacon on the right-hand side shall be red in color with a red lens.

#### BEACON LIGHT MOUNTING

The rear beacons shall be mounted on a smooth aluminum bracket and attached to the apparatus body, one (1) on each side.

#### UPPER LEFT SIDE WARNING LIGHTS

One (1) pair of Whelen 600 Series Super LED warning lights with shall be installed, one (1) each side on the upper left side of the apparatus body. The lights shall be red in color

with red lens. The light(s) shall be installed within a chrome bezel.

#### UPPER RIGHT-SIDE WARNING LIGHTS

One (1) pair of Whelen 600 Series Super LED warning lights shall be installed, one (1) each side on the upper right side of the apparatus body. The lights shall be red in color with red lens. The light(s) shall be installed within a chrome bezel.

#### LOWER FRONT WARNING LIGHTS

One (1) pair of Whelen 600 Series Super LED warning lights shall be installed, one (1) each side on the front of the chassis cab. The lights shall be red in color with clear lens. The light(s) shall be supplied and installed with a chrome bezel.

#### INTERSECTION WARNING LIGHTS

One (1) pair of Whelen 600 Series Super LED warning lights shall be installed, one (1) each side of the chassis fenders. The lights shall be red in color with clear lens. The light(s) shall be supplied and installed with a chrome bezel.

#### LOWER MID-BODY WARNING LIGHTS

One (1) pair of Whelen 600 Series Super LED warning lights shall be installed, one (1) each side of the apparatus, mid-body. The lights shall be red in color with clear lens. The light(s) shall be supplied and installed with a chrome bezel.

#### LOWER REAR WARNING LIGHTS

One (1) pair of Whelen 600 Series model 60R02FCR Super LED warning lights shall be installed, one (1) each side on the lower rear of the apparatus body. The lights shall be red in color with clear lens. The light(s) shall be supplied and installed with a chrome bezel.

#### UPPER REAR SCENE LIGHTS

One (1) pair of Whelen M6 LED scene lights shall be installed, one (1) each side on the upper rear of the apparatus body. The light(s) shall be installed within a chrome bezel.

#### UPPER RIGHT SCENE LIGHTS

One (1) pair of Whelen M6 LED scene lights shall be installed, one (1) each side on the upper right-hand side of the apparatus body. The light(s) shall be installed within a chrome bezel.

#### UPPER LEFT SCENE LIGHTS

One (1) pair of Whelen M6 LED scene lights shall be installed, one (1) each side on the upper left-hand side of the apparatus body. The light(s) shall be installed within a chrome bezel.

#### SCENE LIGHT ACTIVATION

The scene lights shall be activated by a switch located in the cab. Each side shall be activated separately.

**REAR SCENE LIGHTS - ADDITIONAL ACTIVATION**

In addition to the cab mounted switch for the rear scene lights, the rear scene lights shall illuminate when the transmission is placed in reverse gear.

**NIGHT-TIME MODE**

The apparatus shall include a warning light night mode switch which when activated shall reduce the intensity of the warning lights so long as it is not below the minimum intensity required by NFPA 1901 Standard for Automotive Fire Apparatus.

**PAINT**

Manufacture's paint process shall follow all current painting requirements that are used in the industry and the paint shall be of the highest quality and finish.

The chassis shall be painted: FD Specified Code Red The body

shall be painted: FD Specified Code Red

The body and tank shall be painted in base coat and clear coat with both being cut and buffed for a high luster finish.

Prior to reassembly and reinstallation of lights, handrails, door hardware and any miscellaneous body items, an isolation tape or gasket material must be used to prevent damage to the finish painted surfaces. A nylon washer shall be installed under each acorn nut or metal screw that is fastened directly to a painted body surface.

**PAINT – ENVIRONMENTAL IMPACT**

Truck manufacturer shall follow all current federal, state and local paint guidelines to limit the impact on the environment.

**PAINT CHASSIS FRAME ASSEMBLY**

The chassis frame assembly shall remain the color and paint quality as received from the chassis manufacturer. The frame and components shall not be repainted. Components that are considered part of the "frame assembly" are frame rails, cross members, axles, suspension, steering gear and the fuel tank.

**PAINT, COMPARTMENT INTERIOR**

The compartment interior shall be painted with Zolotone gray spatter finish for ease of cleaning and to make it easier to touch up scratches and nicks.

**PAINT FINISH WARRANTY**

The proposed paint finish will be warranted for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions shall be included in the specific warranty document.

**WHEEL RIMS**

The chassis wheels shall be as furnished by the chassis OEM, Black Painted Aluminum.

**LETTERING**

There shall be 24K Gold Leaf or equal 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.

**REFLECTIVE STRIPE**

There shall be a reflective Scotch lite band located on the apparatus cab and body. The band shall be per the purchaser's size, design and color specifications. The reflective band shall be in compliance with current NFPA requirements. Photos or drawings of the layout shall be provided by the purchaser prior to construction.

**CHEVRON STRIPING**

At least 50% of the rear of the unit shall be covered with Red and Fluorescent Yellow-Green alternating 6.00" stripe in an inverted Chevron pattern. A 0.50" Gold reflective stripe shall outline the sides of the wet side tank.

**GENERAL WARRANTY {ONE YEAR}**

A one (1) year new vehicle warranty will be provided, upon delivery and acceptance of the vehicle. The warranty will ensure that the vehicle has been manufactured to the contract specifications and will be free from defects in material and workmanship that may appear under normal use and service within the warranty period. The warranty may be subject to different time and mileage limitations for specific components and parts. This warranty is issued to the original purchaser of the vehicle.

**COMMERCIAL CHASSIS COMPONENT WARRANTY INTERVALS**

The commercial chassis and all of the chassis related components will only be covered by the Chassis Manufacturer's warranty as provided to the vehicle manufacturer. A copy of the chassis manufacturer's warranty will be supplied to define additional details of the warranty provisions.

**CHASSIS COMPONENT WARRANTY**

The general chassis warranty shall be two (2) years and unlimited miles.

The warranty will not apply to any parts or components that are warranted directly by their manufacturers. The warranty will not apply to routine maintenance requirements as described in the service and operator's manual. No warranty whether expressed, implied, statutory or otherwise including, but not limited to any warranty of merchantability or fitness for purpose will be imposed.

The manufacturer or representative will be notified in writing within the warranty

period of any failure of the vehicle to comply with the specified warranty. If requested, the purchaser will promptly return the apparatus, component or part to the manufacturer for inspection of any defect in material or workmanship occurring within the applicable time limits.

The manufacturer will either repair or replace any defective components or parts. Repair or replacement of the defective item will be at the sole discretion of the manufacturer. The Basic Vehicle Warranty covers all components and parts unless specifically covered by other descriptions or otherwise excluded herein. Repair or replacement of components will be done without cost to the purchaser when performed within the warranty period. Warranty repairs will not constitute an extension of the original warranty period, either for the entire apparatus or any specific components or parts.

The warranty will be inclusive and in lieu of all other warranties whether written, oral or implied, including but not limited to any warranty of merchantability or fitness for purpose. The warranty will be void and the manufacturer will not be obligated to repair or replace any component or part where the necessity of such replacement or repair, in the opinion of the manufacturer, is due in whole or in part to loads in excess of factory rated capacities, modification or alteration, accident or other misuse or abuse of the vehicle. In no event will the manufacturer be liable for special or consequential damages including but not limited to injuries to persons or damage to property or loss of vehicle use.

The apparatus will be maintained and serviced, by the purchaser, according to the prescribed schedules outlined in the operators and service manuals. As a condition of the warranty the manufacturer may require that receipts or other evidence be provided to verify that maintenance and service has been performed.

The chassis Allison Transmission Warranty shall be Five (5) Years and Unlimited Miles

The chassis engine warranty shall be Five (5) Year and Unlimited Miles

#### ITEMS EXCLUDED FROM WARRANTY

To better understand the warranty, the following is a description of some conditions that are not covered by this warranty.

#### LOOSE FASTENERS:

Nuts, bolts and screws may loosen due to road shocks, engine vibration, etc. Maintaining necessary tightness is your responsibility.

Glass and lens breakage and scratches.

Chrome, aluminum, or stainless components with bright finishes - general rust and/or staining, bluing or yellowing, rust pits and/or nicks caused by road debris, streaks, stains and corrosion caused by severe wash solutions or road salts.

OTHER: Some further examples that we are not responsible for are as follows: Traveling expense; Road calls; Unauthorized towing charges; Accident repairs, loss of apparatus use; Communications charges; Cost of rental equipment; Repair or replacement of items not furnished or installed by us. Road tests or Dynamometer testing.

Tires are covered by their respective manufacturer's warranty.

#### MODIFICATIONS TO ORIGINAL EQUIPMENT

If dealers or customers cause any vehicle modifications or equipment installations to be performed and these modifications or installations adversely affect other vehicle components or vehicle performance, we will not accept any product liability or claims under the terms of this warranty. These claims and any required repairs would be the responsibility of the person doing the modification or installation.

#### CHANGES IN COMPONENT SPECIFICATIONS

Specifications for components (make or model) installed on the apparatus, manufactured by companies other than the apparatus manufacturer are subject to change without notice. Specifications for such components will be as available at the time of manufacture of the apparatus. The apparatus manufacturer will not be held liable for any specification deviations from original contract specifications on such components made by the original component manufacturer.

#### BODY WARRANTY, LIFETIME OF SERVICE

A structural warranty shall be provided by the apparatus manufacturer for the proposed body and components to be free from defects in material and

workmanship, under normal use and service, for the lifetime of service at fire department, 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.

There shall be no exceptions to the lifetime body 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, TEN YEARS**

The finish paint as used on the proposed apparatus shall be warranted against defects in materials and workmanship for a prorated 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 apparatus shall void this warranty.

**TANK WARRANTY, LIFETIME**

For normal fire department applications, the tank shall have a limited Lifetime warranty that provides warranty service for the life of the fire apparatus in which the tank is installed. Warranties are transferable if the apparatus ownership changes by requesting the transfer. In applications where the tank will be subject to severe conditions, the tank may have a warranty unique to the application that is clearly defined for each such application.

The apparatus booster tank shall be warranted by the truck manufacturer and not a third-party tank builder, this shall reduce the warranty repair time and streamline the process. There shall be no exceptions to this requirement.

**APPARATUS ELECTRICAL WARRANTY, FIVE YEAR**

The apparatus electrical system as detailed herein shall have an electrical warranty against defects in materials and workmanship for a 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 electrical system shall void this warranty.