

## St. Anthony – South Fremont V.F.D., ID

One (1)  
BS-10-3600

### **FREIGHTLINER M2 CONVENTIONAL CHASSIS**

#### ENGINE AND ENGINE EQUIPMENT

- MBE900-300 7.2L 300HP @2300 RPM; 2500 860 lb/ft @ 1250 RPM
- 2004 EPA /Carb emission certification
- Engine mounted oil check & fill
- One piece valve cover
- Side of hood air intake with NFPA compliant ember screen and fire
- Leece Neville 12 volt 270 amp 4949PA pad mounted alternator
- Two (2) Alliance 1131 GRP31 12 volt MF 1900CCA threaded stud batteries
- Battery box frame mounted
- Frame ground return for battery cable
- No clutch
- Wabco 15.5 CFM air compressor
- Teflon compressor discharge line
- Electrical engine integral warning & derate protect system
- No Retarder
- Single horizontal muffler w/horizontal tail pipe exhaust, right hand mount
- Horton HT650 frontal air on/off engine fan clutch
- Automatic control w/dash switch w/o indicator light
- MBE fuel filter
- Full flow oil filter
- 1000 square inch radiator - aluminum
- Antifreeze to -34F, ethylene glycol pre-charged SCA heavy duty coolant
- Rubber coolant hoses
- Constant tension hose clamps for coolant hoses
- Aluminum flywheel housing
- Delco 12 volt 29MT starter

#### TRANSMISSION AND EQUIPMENT

- Allison 3000 series automatic transmission w/PTO provision for fire/emergency
- WTEC Transmission programming - 5 speed fire & emergency
- Electronic transmission customer access connector mounted BOC
- Magnetic plugs, engine drain, transmission drain, axles fill & drain
- Push button, electronic shift control, dash mounted
- Transmission oil check and fill with electronic oil level check
- Water to oil transmission cooler - frame mounted

#### FRONT AXLE AND SUSPENSION

- Meritor MFS-12-143A front axle @ 12,000
- Meritor 16.5 x 5 "Q+" cast spider cam front brakere, double anchor, fab shoes

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- Fire & emergency severe service, non-asbestos front lining
- Conmet cast iron front brake drums
- Front brake dust shields
- Chicago rawhide Scotseal Plus XL front oil seals
- Standard spindle nuts front slack adjusters
- Meritor automatic front slack adjusters
- TRW THP-60 power steering
- Power steering pump
- Two (2) quart see through power steering reservoir
- 12,000# taperleaf front suspension
- Maintenance free rubber bushings - front suspension
- Front shock absorbers
- Goodyear G149 RSA11R22.5 14 ply radial front tires
- Conmet preset bearing aluminum front hubs
- Accuride 28408 22.5 x 8.25 10-hub pilot 2-hand steel disc front wheels

### REAR AXLE AND EQUIPMENT

- Meritor RS-23-160 R-SRS quiet ride single rear axle @23,000#
- 5.38 Axle ratio
- Iron rear axle carrier housing
- 17T Meritor main driveline with half round yokes
- Meritor 16.5 x 7 "Q+" cast spider cam rear brakes, double anchor, fab shoes
- Fire & emergency severe service, non-asbestos rear lining
- Brake cams and chambers on forward side of drive axle
- Conmet cast iron rear brake drums
- Rear brake dust shields
- Chicago Rawhide Scotseal rear oil seals
- Haldex long stroke drive axle spring parking chambers
- Meritor automatic rear slack adjusters
- 23,000# flat leaf rear spring suspension with radius rod
- Spring suspension - no axle spacers
- Standard U-bolt pad
- Fore/aft control rods
- Goodyear G164 RTD 11R22.5 14 ply radial rear tires
- Conmet iron rear hubs
- Accuride 28408 22.5 x 8.25 10-hub pilot 2-hand steel disc rear wheels

### BRAKE SYSTEM EQUIPMENT

- Air brake package
- Wabco 4S/4M ABS w/o traction control enhancement
- Reinforced nylon, fabric braid & wire braid chassis air lines
- Relay valve w/5-8 PSI crack pressure, no rear proportioning valve
- BW AD-9 brake line air dryer w/heater

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- Steel air brake reservoirs
- BW DV-2 auto drain valve w/o heater - all tanks

### TRAILER CONNECTION

- No trailer air hose
- Upgraded Cab multiplexing unit

### FRAME

- 11/32" x 3-1/2" x 10-15/16" Steel frame (8.73MM x 277.8/.344" x 10.94) 120 KSI
- 1900 MM (75") rear frame overhang
- Square end of frame
- Standard weight engine cross member
- Standard rear most cross member
- Standard suspension cross member

### CHASSIS EQUIPMENT

- Three-piece 14" painted steel bumper with collapsible ends
- Front tow hooks - frame mounted
- Bumper mounting for single license plate
- Clear frame rails - no protrusions outboard both rails BOC to rear suspension
- Grade 8 threaded hex-head frame fasteners

### FUEL TANKS AND EQUIPMENT

- 50 Gallon/189 liter rectangular aluminum fuel tank - right hand side
- Plain aluminum/painted steel fuel/hydraulic tanks with painted bands
- Fuel tanks forward
- Fuel tank cap
- Equiflo inboard fuel system

### CAB EXTERIOR

- A 106" BBC flat roof conventional cab
- Air cab mounts
- Painted plastic grille
- Fiberglass hood
- Single electric horn
- All locks keyed the same
- Rear license plate mount at end of frame
- Integral headlight/marker assembly
- Five (5) amber marker lights
- Integral stop/tail/backup lights
- Standard front turn signal lamps
- Dual molded-in color west coast mirrors
- Door mounted mirrors
- 102" equipment width

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- LH/RH 8" molded in color convex mirrors mounted under primary mirrors
- Right hand down view mirror
- Standard side/rear reflectors
- 63" X 14" tinted rear window
- Tinted door glass, left and right side with tinted nonoperating wing windows
- Manual door window regulators
- Tinted windshield
- 8 Liter windshield washer reservoir w/o fluid level indicator

### CAB INTERIOR

- Opal gray vinyl interior
- Molded plastic door panels
- Gray vinyl mats with insulation
- Forward roof mounted console with upper storage compartments
- Two (2) cup holders, left and right side of dash
- Heater, defroster and air conditioner
- Main HVAC controls with recirculation switch
- Standard heater plumbing
- Sanden compact air conditioner compressor
- Binary control R-134A
- Silencer package for cab
- Solid state circuit protection and fuses
- 12-Volt negative ground electrical system
- Dome light w/3-way switch activated by left and right hand doors
- Cab door latches with manual door locks
- Full width bench seat
- Left and right hand integral door panel arm rests
- 3-point fixed d-ring driver & passenger 2-point center
- Fixed steering column
- 18" four spoke charcoal steering wheel
- Driver and passenger interior sun visors

### INSTRUMENT PANEL AND CONTROLS

- Black gauge bezels
- Gray Instrument panel - Driver side
- Low air pressure light and buzzer
- Primary & secondary air pressure gauges
- Engine compartment mounted air restriction indicator w/graduations, w/warning light in dash
- Cruise control - electronic engine, with switches in left hand switch panel
- Key operated ignition switch & integral start position; 4-position off/run/start/acc
- Odo/trip/hour/diagnostic/voltage display 1x7 char, 26 warning lamps, data linked ICU3
- Diagnostic interface connector, 9-pin, SAE J1587/1708/1939 located below dash
- Electric fuel gauge

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- Programmable RPM control - electronic engine
- Electrical engine coolant temperature gauge
- Transmission oil temperature gauge
- Engine and trip hour meters integral within driver display
- Electric engine oil pressure gauge
- Electronic MPH speedometer w/secondary KPH scale w/o odometer
- Electronic tachometer 3000 RPM
- Digital voltage display integral with drier display ICU3
- Single electric windshield wiper motor w/delay
- Marker light switch panel integral w/headlight switch
- One valve parking brake system with warning indicator
- Self cancel turn signal switch w/dimmer, washer/wiper & hazard in handle
- Integral electronic turn signal flasher

### PAINT DESIGNS

- Chassis cab shall be painted one solid color
- Front & rear wheels painted vendor white

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### **CHASSIS ADDITIONS & MODIFICATIONS**

One (1)  
CC-50-0100

#### **STEP SURFACE**

The commercial chassis step area on the driver's side shall have slip resistant overlay material installed on each step surface.

One (1)  
CC-50-0108

#### **STEP SURFACE**

The commercial chassis step area on the passenger side shall have slip resistant overlay material installed on each step surface.

One (1)  
CC-50-0510

#### **STEP TYPE FUEL TANK**

There shall be a step type fuel tank furnished with the chassis.

One (1)  
CC-50-5500

#### **FRONT MUD FLAPS**

Heavy-duty, black colored, rubber mud flaps shall be furnished and installed behind the front wheels of the vehicle. Mud flaps shall extend the full width of the front tires and are to be attached with stainless steel fasteners.

One (1)  
CC-50-6000

#### **REAR MUD FLAPS**

Heavy-duty, black colored, rubber mud flaps shall be furnished and installed behind the rear wheels of the vehicle. Mud flaps shall extend the full width of the rear duals and are to be attached with stainless steel fasteners.

One (1)  
CC-51-1100

#### **HORIZONTAL CHASSIS EXHAUST**

The chassis exhaust system shall be extended to the front of the right rear wheel.

One (1)  
CC-65-0400

#### **ALTERNATOR**

The alternator shall be of adequate size to meet the NFPA requirements and to accommodate the specific apparatus electrical load.

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### **PUMP AND PLUMBING**

One (1)  
DD-00-0490

#### **WATEROUS CX-1250 GPM SINGLE STAGE FIRE PUMP**

The centrifugal type fire pump shall be a Waterous model CX midship mounted with a rated capacity of 1250 GPM. The pump shall meet NFPA 1901 requirements.

One (1)  
DD-01-4000

#### **SINGLE STAGE MIDSHIP MOUNTED FIRE PUMP**

A Waterous Model CXY fire pump shall be midship mounted, single stage centrifugal type. In addition to meeting NFPA 1901 requirements, it shall be constructed and mounted in accordance with the following specifications.

Fire pump shall incorporate high strength involute toothform Morse HV chain drive transmission. Benefits of the chain drive include quiet, noiseless operation at high shaft speeds, and improved power-transmitting capabilities due to the fact that the chain wraps itself halfway around the gear distributing a very uniform pattern of tooth engagement. Pump transmissions utilizing spur or helical drive gears that create high noise levels at elevated speeds and only permit minimal tooth to tooth engagement are not acceptable.

The shift engagement shall be accomplished by a free sliding collar and shall incorporate an internal locking mechanism to insure that collar will be maintained in ROAD or PUMP operation.

At time of delivery the pump shall be tested and rated as follows:

- 100% of rated capacity at 150 pounds net pressure
- 70% of rated capacity at 200 pounds net pressure
- 50% of rated capacity at 250 pounds net pressure
- 100% of rated capacity at 165 pounds net pressure

The pump casing shall be a three-piece, vertically split design, high strength gray iron.

The impeller shaft shall be stainless steel, heat treated, and precisely machined and ground to size. All bearings are to be oil or grease lubricated, ball-type, located outside the pump casing in the pump transmission, to accurately align and support the impeller shaft assembly and input shaft. Ball bearings are to be deep groove type, designed to carry both radial and axial loads. A face-type, self-adjusting, corrosion and wear resistant mechanical seal is to be provided.

The pump must be tested by the pump manufacturer for 10 minutes hydrostatically at a pressure of 500 psig. Certification by the pump manufacturer must be provided.

The pump shall be provided with a plate giving the rated flow at "capacity" and "pressure" test pressures, together with the R.P.M. of the engine at those pressures and deliveries and mounted in clear view of the pump operator's panel. Data plate shall include model and serial numbers of the pump body and chain transmission, hydro and discharge test pressures, and the date of pump and transmission manufacture.

All pump components including relief valve, pump shift and priming system shall be manufactured by the Waterous Company to insure sole source responsibility and engineered compatibility.

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### **PRIMING SYSTEM**

The pump shall be capable of taking suction and discharging water with a lift of 10 feet in not more than 30 seconds with the pump dry, through 20 feet of suction hose of appropriate size. It shall be capable of developing a vacuum of 22" at an altitude of up to 1000 feet.

A vacuum test with a capped suction of at least 20' long shall develop 22" of vacuum and hold a vacuum with a drop not in excess of 10" in 5 minutes.

One (1)  
DD-04-0070

### **VPE PRIMING SYSTEM**

A high capacity, electrically driven Waterous model VPE rotary vane priming pump shall be provided mounted in the pump compartment.

The priming system shall include a one-gallon oil reservoir tank that is conveniently located behind a hinged access door. Priming tank shall be properly vented so as to provide priming pump lubrication.

One (1)  
DD-04-0100

### **MANUAL CONTROL PRIMING PUMP**

Priming pump shall be activated by a mechanical/electric valve with a single pull control located at the pump operator's panel area. Valve actuation may be accomplished while the main pump is operational, if necessary to assure a complete prime.

One (1)  
DD-04-0550

### **PNEUMATIC PUMP SHIFT**

The pump shift shall be air operated and shall incorporate an air cylinder with an actuating switch to shift from road to pump and back. The pump shift air valve shall be supplied with the pump by the pump manufacturer.

The pump shift switch shall be mounted in the cab and identified as "Pump Shift" and include instructions permanently inscribed on the pump shift switch plate. The In-Cab operating switch uses a spring loaded lock to prevent it from accidentally being moved.

\*A "Pump Engaged" indicator shall be provided in the driving compartment to indicate that the pump shift has been successfully completed.

\*An "Ok to Pump" indicator shall be provided in the driving compartment to indicate that the pump is engaged, the chassis transmission is in pump gear, and the parking brake is engaged.

\*A "Throttle Ready" indicator shall be provided at the pump operator's panel that indicates that the apparatus is in "OK to Pump" mode or that the chassis transmission is in neutral and the parking brake is engaged.

\*An interlock system shall be provided to prevent advancement of the engine speed at the pump operators panel unless the chassis transmission is in neutral and the parking brake is engaged, or the apparatus is in "OK to Pump" mode.

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\*Controls for the pump shift are to be in the cab, and easily accessible.

One (1)  
DD-04-0600

### MANUAL PUMP SHIFT OVERRIDE

There shall be a single control located in the lower area of the pump operators control panel to manually shift the pump into and out of gear. The control shall have a control handle with proper identification label.

One (1)  
DD-04-5000

### MECHANICAL SHAFT SEAL

The pump shall be equipped with self-adjusting, maintenance free, "Mechanical Shaft Seal" which is designed to be functional in the unlikely event of a seal failure. Pumps with packing which requires periodic adjustment and/or replacement will not be acceptable.

One (1)  
DD-04-6000

### PUMP REVOLUTION ADAPTER

A mechanical pump revolution adapter with cap shall be supplied with the apparatus.

One (1)  
DD-04-7300

### APPARATUS MONITORING SYSTEM

The Fire Research **INControl** pressure governor and all-in-one instrument panel uses state of the art programmable microprocessor technology. It will maintain a steady pump discharge pressure by controlling engine speed or hold a selected engine RPM. It offers complete engine control and remote display in a single compact unit. The **INControl** operates in one of two modes, pressure or RPM. In pressure mode the **INControl** maintains a constant pump discharge pressure. The discharge pressure is monitored and compared to the selected pressure setting, the engine RPM is varied to keep the discharge pressure at the selected setting. In RPM mode the **INControl** maintains a constant engine RPM. The pump discharge pressure is monitored and can vary but, as a safety feature it will be limited to an increase of 30 PSI. If the discharge pressure increases 30 PSI the governor will automatically lower the engine RPM to prevent a high pressure surge. The panel has three 4-digit LED displays for pump discharge, pump intake, and engine RPM. The LEDs are more than 1/2 high. There is an LED bar graph to show PSI or RPM setting depending on the mode, and three LED bar graphs that provide a constant display of the battery voltage, engine coolant temperature, and engine oil pressure.

All controls and indicators are located on the front of the control module.

#### Features:

- Power Up in Pressure Mode
- Automatic Regulation of Pump Discharge Pressure
- Manual Control of Pressure or Engine RPM Settings
- Field Programmable Presets
- Diagnostic Capabilities
- No Pressure or RPM Variation When Changing Modes
- Limits Increase of Pressure When in RPM Mode
- Recognition of No Water Condition With Automatic Response
- Interlock Signal Recognition and OK To Pump LED

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- Return to Engine Idle With the Push of a Button

The monitoring system shall be furnished, installed and tested by the apparatus body builder.

One (1)  
DD-04-7500

### **MANIFOLD DRAIN**

A manifold drain valve shall be furnished with all pump drains connected to it so that the entire pump system may be drained by one control.

Drain valve assembly shall consist of a stainless steel plunger and a bronze body rigidly attached to the fire pump transmission.

A control handle is to be provided and located below the driver's side running board of the pump house, properly identified as MASTER DRAIN.

One (1)  
DD-99-0500

### **FIRE PUMP WARRANTY**

The Waterous fire pump shall carry the pump manufacturer's five (5) year warranty covering defective parts and workmanship. A copy of the pump manufacturer's warranty policy shall be provided with the completed apparatus.

One (1)  
DH-20-1000

### **UL TEST**

The pump shall undergo an Underwriters Laboratories Incorporated test per Class A requirements of NFPA #1901 prior to delivery of the completed apparatus. The UL acceptance certificate shall be furnished with the apparatus on delivery.

One (1)  
DH-20-2000

### **PUMP COOLING LINE**

A 3/8" cooling line shall be installed to recirculate water from the pump back to the water tank, to cool the pump during pro-longed pumping operations. The cooling line shall be controlled at the operator's position with a quarter turn valve.

One (1)  
DH-20-5000

### **HEAT EXCHANGER**

A heat exchanger shall be provided on the pump driving engine cooling system. The heat exchanger shall not allow mixing of the pump driving engine coolant and water from the fire pump.

A gated line shall be installed to provide water from the fire pump to the pump driving engine heat exchanger to assist in engine cooling during pumping operations. The heat exchanger line shall be controlled at the pump operator's panel.

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One (1)  
EE-01-2000

### **WATEROUS PUMP INSTALLATION**

The Waterous fire pump shall be installed in conjunction with the body manufacturing process. Fire pump installation shall include installation of the fire pump, modification and/or fabrication of new drivelines and all pump-mounting brackets. All drivelines shall be spin balanced prior to final installation.

One (1)  
EE-01-3010

### **AUXILIARY PUMP**

There shall be a Darley 2BE18V Vanguard Auxiliary Pump furnished and mounted on the apparatus to meet the following performance criteria:

100 GPM @ 140 PSI  
150 GPM @ 115 PSI  
300 GPM @ 45 PSI  
375 GPM @ 25 PSI

The pump shall include the following components:

- Plunger type Injection Packing Glands.
- Bronze Alloy Impeller with Double seal ring design to eliminate end thrust.
- Renewable double-labyrinth type, solid Bronze Impeller Seal Ring.
- Precision-ground Stainless Steel Pump Shaft splined for broached impeller hubs. The pump to have hard ceramic coating under the packing glands to reduce friction.
- Stuffing Box with plastallic injection type packing system.
- Deep Groove Radial-Type Ball Bearings for pump shaft.
- High-strength aluminum alloy pump casing with bronze fittings.
- Aluminum alloy transmission cast with precision spur cut gears from heat-treated alloy steel.
- Dependable splash-type lubrication system
- 18 HP Briggs & Stratton Vanguard gasoline powered engine with overhead valves.
- Adjustable mechanical type governor and throttle control lever.
- 12-volt electric start with rope recoil backup.

Pump plumbing shall have check valves to prevent the backflow of water between the two water pumps. The auxiliary pump shall be located above the main fire pump in the dunnage area on the driver's side.

A 2-1/2" pressure gauge shall be located on the main pump panel.

An additional priming control valve shall be provided for priming the auxiliary pump with the specified priming pump.

Dual controls including ignition, engine start/stop, and throttle for the auxiliary pump shall be provided both on the pump panel and in the cab. Cab controls are in addition to the 2-1/2" pressure gauge and tank level gauge located in the cab and which are specified separately within these specifications.

The auxiliary pump shall be plumbed in common with the midship water pump to speedlays, driver's side 1-1/2" discharge, passenger's side 1-1/2" discharge and the booster reel.

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One (1)  
EE-01-4040

### FUEL TANK

There shall be a fuel tank directly attached to the auxiliary pump assembly. The fuel tank shall have capacity of approximately seven (7) quarts. There shall be a shut/off valve furnished between the fuel tank and carburetor assembly.

One (1)  
EE-01-4200

### ENGINE THROTTLE

A vernier engine control throttle for manually operated engines shall be furnished on the pump operator's control panel. There shall be an engraved identification label provided to read **THROTTLE**.

One (1)  
EE-02-1000

### INTAKE RELIEF VALVE

A 2-1/2" intake relief valve preset at 125 psi shall be permanently installed on the suction side of the fire pump. The valve shall have an adjustment range of 75 psi to 250 psi, and shall be designed to automatically self-restore to a non-relieving position when excessive pressure is no longer present.

Discharge side of the intake relief valve shall be plumbed to the right side below the running boards, away from the pump operator, and shall terminate with a 2-1/2" NST male chrome threaded adapter, marked with an engraved tag "Intake pressure relief outlet - Do Not Cap".

One (1)  
EE-02-5100

### HOT DIP GALVANIZED INTAKE MANIFOLD

The suction manifold shall be fabricated from heavy-duty tubular steel. The suction manifold shall have radiused sweep elbows to minimize water turbulence into the suction volute. The suction manifold shall be welded and pressure tested prior to the galvanizing process. After testing the entire suction manifold shall be hot dip galvanized to minimize corrosion. The hot dip galvanized suction manifold shall be attached to the pump intake volute with a heavy-duty, flexible victaulic coupling.

The hot dip galvanized manifold assembly shall have a ten (10) year warranty.

One (1)  
EE-02-5600

### DRIVER SIDE STEAMER INLET

There shall be one (1) steamer inlet furnished on the driver side of pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

Steamer inlet to be as short as possible to allow suction fittings to be attached without extending past the side running boards.

One (1)  
EE-02-5700

### PASSENGER SIDE STEAMER INLET

There shall be one (1) steamer inlet furnished on the passenger side of pump panel. The suction inlet shall have 6" NST thread. The suction inlet shall have a removable strainer provided inside the external inlet.

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Steamer inlet to be as short as possible to allow suction fittings to be attached without extending past the side running boards.

One (1)  
EE-20-0500

### **SUCTION CAP DRIVER'S SIDE**

The driver's side suction inlet shall be equipped with a chrome-plated, long handled, cap capable of withstanding 500 PSI.

One (1)  
EE-20-1000

### **SUCTION CAP PASSENGER SIDE**

The passenger's side suction inlet shall be equipped with a chrome-plated, long handled, cap capable of withstanding 500 PSI.

One (1)  
ES-02-1500

### **2-1/2" GATED SUCTION INTAKE DRIVER SIDE**

A 2-1/2" independent gated suction intake shall be provided on the driver's side pump panel. Intake shall be provided with a quarter-turn valve and control. The intake shall have a 3/4" drain valve with handle. Each intake shall have chrome-plated female swivel adapter with removable internal screen and a chrome-plated plug type cap with end chain.

One (1)  
ES-02-1510

### **SUCTION VALVE CONTROL**

Suction valve shall have swing type control handle located adjacent to valve.

One (1)  
ES-04-0000

### **TRIM PANEL**

A bolt on stainless steel trim panel shall be provided for easy access to the valve for repair or removal without removing the side panel on all intakes and discharges.

One (1)  
FA-00-1000

### **HOT DIP GALVANIZED DISCHARGE MANIFOLD**

The discharge manifold shall be fabricated from heavy-duty tubular steel. The discharge manifold shall be fabricated, welded, all fittings attached and pressure tested prior to the galvanizing process. After testing the entire suction manifold shall be hot dip galvanized to minimize corrosion. The hot dip galvanized discharge manifold assembly shall be bolted to the pump and have stabilizer arms attached to reinforce the discharge manifold.

The hot dip galvanized manifold assembly shall have a ten (10) year warranty.

One (1)  
FA-01-0000

### **PUMP DISCHARGES**

Each gated discharge outlet shall include an Akron heavy-duty brass, quarter-turn, swing-out ball valve. All lines to have victaulic couplings or hose with stainless steel fittings installed where flex may occur to

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prevent cracking of the plumbing system. Each discharge shall have 3/4" cast bronze 1/4 turn drain valve complete with reinforced teflon seals, and blowout proof stem rated to 600 psi. A chrome-plated zinc handle shall be provided on each drain valve, complete with a 1" X 1 1/2" recessed identification label. Drains shall be aligned in a straight horizontal row at the lower edge of the corresponding pump panel so as to allow for ease of identification and operation. Each drain shall be labeled and numbered to correspond to the respective discharge outlet and coloring.

Individual discharge controls are to be aligned in a straight horizontal row across the pump operator's control panel, directly in-line with the corresponding discharge outlet line pressure gauges.

One (1)  
FA-01-0010

### **GALVANIZED PLUMBING**

All rigid piping five-inch diameter or less shall be galvanized type with tapered thread or victaulic type couplings.

Two (2)  
FA-01-0500

### **DRIVER SIDE DISCHARGE OUTLET**

Each 2-1/2" discharge outlet on the driver's side pump panel shall have a 2-1/2" quarter turn valve with control on pump operator's panel. There shall be a chrome plated 2-1/2" NST adapter that extends through the pump panel. Each discharge shall be provided with chrome-plated 30-degree discharge elbow.

Two (2) 2-1/2" discharges shall be provided on the driver's side pump panel.

Two (2)  
FA-01-0501

### **MANUAL VALVE**

Discharge valve shall be swing-out type with manual control handle located on pump operator's panel.

Two (2)  
FA-01-0510

### **MANUAL DRAIN VALVE**

The driver's side 2-1/2" discharge outlet shall have a 3/4" drain with individual control on side pump panel.

Two (2)  
FA-01-1000

### **PASSENGER SIDE DISCHARGE OUTLET**

Each 2-1/2" discharge outlet on the passenger's side pump panel shall have a 2-1/2" quarter turn, swing-out valve with control on pump operator's panel. There shall be a chrome-plated 2-1/2" NST adapter that extends through the pump panel. Each discharge shall be provided with chrome-plated 30-degree discharge elbow.

Two (2) 2-1/2" discharges shall be provided on the passenger's side pump panel.

Two (2)  
FA-01-1001

### **MANUAL VALVE**

Discharge valve shall be swing-out type with manual control handle located on pump operator's panel.

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Two (2)  
FA-01-1010

### **MANUAL DRAIN VALVE**

The passenger's side 2-1/2" discharge outlet shall have a 3/4" drain with individual control on side pump panel.

One (1)  
FA-01-2000

### **PASSENGER SIDE REAR DISCHARGE OUTLET**

There shall be one (1) 2-1/2" discharge outlet located on the passenger's side rear of the body below the hose bed. The discharge outlet shall have a 2-1/2" quarter turn, swing-out valve with control on pump operator's panel. There shall be a chrome-plated 2-1/2" NST adapter that extends through the rear of the body. The discharge shall be provided with a chrome-plated 30-degree discharge elbow.

One (1)  
FA-01-2001

### **MANUAL VALVE**

Discharge valve shall be swing-out type with manual control handle located on pump operator's panel.

One (1)  
FA-01-2010

### **MANUAL DRAIN VALVE**

The passenger's side rear 2-1/2" discharge outlet shall have a 3/4" drain with individual control on side pump panel.

Five (5)  
FA-01-3220

### **2-1/2" CAPS AND CHAINS**

The following discharge outlets shall be equipped with a 2-1/2" chrome-plated cap and chain.

All 2-1/2" discharges shall have chrome plated 30 degree adapters, chrome plated caps and chains.

One (1)  
FB-02-1300

### **1-1/2" RUNNING BOARD DISCHARGE**

One and one half (1-1/2") discharge located at driver side running board. The discharge shall be plumbed using two-inch (2") pipe and wire reinforced high-pressure hose coupled with stainless steel fittings. The discharge outlet shall have two-inch quarter turn swing out valve with control on pump operator's panel. The discharge outlet shall have 1-1/2" NST male fitting.

One (1)  
FB-02-1310

### **MANUAL DRAIN VALVE**

The catwalk discharge outlet shall have a 3/4" drain with individual control on side pump panel.

One (1)  
FB-02-1400

### **1-1/2" RUNNING BOARD DISCHARGE**

One and one half (1-1/2") discharge located at passenger side running board. The discharge shall be plumbed using two-inch (2") pipe and wire reinforced high-pressure hose coupled with stainless steel

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fittings. The discharge outlet shall have two-inch quarter turn swing out valve with control on pump operator's panel. The discharge outlet shall have 1-1/2" NST male fitting.

One (1)  
FB-02-1410

### **MANUAL DRAIN VALVE**

The catwalk discharge outlet shall have a 3/4" drain with individual control on side pump panel.

One (1)  
FB-02-2500

### **MONITOR PROVISION**

There shall be a three-inch (3") deluge discharge above fire pump. Deluge outlet shall be plumbed with 3" quarter turn, swing out valve and 3" I.D. pipe with 3" NPT male thread. The three-inch valve shall have a slow close device. Deluge outlet shall have control on pump operator's panel.

One (1)  
FB-02-2502

### **MANUAL VALVE WITH SLOW CLOSE**

Discharge valve shall be swing out type, with slow close and manual control handle located on pump operator's panel.

One (1)  
FB-02-2505

### **MANUAL DRAIN VALVE**

Monitor shall have a 3/4" drain with individual control on side pump panel.

One (1)  
FB-02-4000

### **TFT 12" EXTEND-A-GUN**

A Task Force Tips 12" Extend-a-Gun unit shall be provided and installed on the deck gun discharge to elevate the deck gun 12" above the travel position. There shall be a light in the cab to indicate when the Extend-a-Gun is in the elevated position.

One (1)  
FB-30-5600

### **LIFT OFF MONITOR AND DIRECT TRUCK MOUNT**

There shall be a lift off style monitor and direct truck mount adapter furnished and installed on a three-inch deluge pipe. The monitor shall be capable of 360-degree rotation, and be capable of flowing 1250 GPM when installed on the direct truck mount. The lift off monitor shall have heavy-duty dual lock pins when installed on the direct truck mount.

Monitor shall be Akron 3422 with direct truck mount adapter.

One (1)  
FB-30-7000

### **NOZZLE**

An Akron Master Stream Nozzle model 5060 shall be provided. The nozzle shall be designed for a constant nozzle pressure at varying flows. The nozzle shall be designed for flowing 250-1250 GPM. The nozzle shall be rated at an operating pressure of 80 psi.

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One (1)  
FB-30-7100

### **STREAM SHAPER AND STACKED TIPS**

There shall be an Akron model 3488 stream shaper with a set of Akron model 2499 stacked tips. Stacked tips to have 2-1/2" NST thread with 2", 1-3/4", 1-1/2", 1-3/8" removable tips.

Two (2)  
FC-31-1500

### **1-3/4" SPEEDLAY ASSEMBLY IN FRONT OF PUMP**

Speedlay hosebed(s) shall be designed to carry 200 feet of 1-3/4" double jacket fire hose. Speedlay hosebed(s) shall be located in front of the fire pump. The floor of the speedlay hosebed(s) shall be perforated to allow for drainage. The walkway side of the speedlay(s) shall have a large opening with radius corners for access to the hose coupling. The speedlay(s) shall be an integral part of the pump compartment with all panels bolted in place and removable. Polished stainless steel hose roller assemblies shall be provided at the sides and lower edges of the speedlay opening on each side of the apparatus body.

The speedlay discharge(s) shall be plumbed using rigid pipe or flexible high-pressure hose coupled with stainless steel fittings. The speedlay(s) shall be provided with 2" brass valve, and a 2" 90 degree swivel adapter with 1-1/2" NST male outlet thread.

Two (2) 1-3/4" speedlays shall be provided.

Two (2)  
FC-31-1501

### **MANUAL VALVE**

Discharge valve shall be swing out type with manual control handle located on pump operator's panel.

Two (2)  
FC-31-1510

### **MANUAL DRAIN VALVE**

Each crosslay/speedlay shall have a 3/4" drain with individual control on side pump panel.

Two (2)  
FC-31-4100

### **REMOVABLE SPEEDLAY TRAY**

There shall be a removable tray furnished for each speedlay assembly. The tray shall be fabricated with 1/8" aluminum, and formed to fit the contour of the speedlay assembly. The removable tray shall have handholds cut into each side at each end to assist in loading and unloading the tray from the speedlay assembly.

One (1)  
FC-31-6700

### **BOOSTER HOSE REEL**

There shall be a Hannay booster hose reel with leak proof ball bearing swing joint, adjustable friction brake and electric rewind furnished. The reel shall be plumbed with wire reinforced; high-pressure hose coupled with brass fittings, and have one-inch (1") swing out, ball valve with control on pump operator's panel.

Booster hose reel is to be mounted at the rear of the apparatus body inside the upper rear compartment.

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One (1)  
FC-31-6701

### **MANUAL VALVE**

Discharge valve shall have manual control handle located on pump operator's panel.

One (1)  
FC-31-6809

### **PAINTED BOOSTER REEL**

Each booster reel shall have a steel frame and drum assembly with side discs. The frame, drum, drive chain, sprocket, hub assembly swivel joint and fasteners shall be painted silver. The booster reel assembly shall be Hannay model F.

One (1)  
FC-31-7200

### **ROLLER ASSEMBLY FOR BOOSTER REEL**

The booster hose reel shall be equipped with a heavy-duty, stainless steel roller assembly.

Two (2)  
FC-31-8200

### **BOOSTER HOSE**

One hundred (100) foot length of 1-inch rubber covered booster hose, high-pressure type at least 800 lbs test, coupled and installed on the specified booster hose reel.

Two (2) 100' lengths of 1" booster hose shall be provided.

One (1)  
FF-26-8300

### **FOAM SYSTEM**

A Foam Pro Model #1600 built in foam injection system shall be provided with the controls at the operator's panel.

The foam system shall be a fully automatic, electronic, direct injection foam proportioning system. The system shall be capable of Class A foam concentrate. The foam proportioning operation shall be based on an accurate direct measurement of water flows with no water flow restriction. The foam system shall be installed in accordance with the manufacturer's recommendations.

The system shall be equipped with a control module. It shall be installed on the pump operator's panel and enable the pump operator to perform the following functions;

1. Activate the foam system
2. Change foam concentrate proportioning rates of .1% to 1%.
3. Flash a "low concentrate" warning light when the foam concentrate tank runs low of concentrate and in two minutes if foam concentrate is not added to tank, shut the foam concentrate pump down.

The foam system shall have a 12-volt, 1/3-hp electric motor driven positive displacement piston type foam concentrate pump with a rated capacity of .01 to 1.6 GPM with operating pressures up to 400 psi.

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The FoamPro system shall be plumbed to the following discharge outlet.

The foam system shall be plumbed to the passenger's side 1-1/2" discharge, both crosslays, and the booster reel.

One (1)  
FF-27-0100

### **SINGLE FOAM TANK PLUMBING SYSTEM**

The foam tank shall be plumbed with three-quarter inch (3/4") valve and corrosion resistant hose from the foam tank to the foam inlet. There shall be a three-quarter inch (3/4") drain line furnished on the foam tank. Drain valve to be located on foam tank with corrosion resistant hose piped to below the frame level of the chassis.

One (1)  
FF-27-2000

### **FOAM TANK**

A 20-gallon foam concentrate tank shall be furnished as an integral component of the booster tank. The foam tank shall have a separate fill tower provided in a location to allow easy access for filling. Fill tower shall be equipped with a pressure/vacuum vent and have a sealed airtight cover. Tank shall be plumbed to the on board "Class A" foam system. A valved drain shall be provided at the lowest point of the foam tank. The drain shall be plumbed to drain directly to the surface below the apparatus without contacting other body or chassis components.

The following labels shall be attached to the foam tank:

"CLASS A FOAM TANK FILL"

"WARNING: DO NOT MIX BRANDS AND TYPES OF FOAM"

One (1)  
FH-03-0100

### **TANK TO PUMP PLUMBING**

A 3" *Akron* ball type gated suction valve shall be furnished from the tank to the pump, complete with a flexible connection and enclosed in the pump compartment.

A check valve shall be provided and installed in the line between the tank and the pump to prevent the possibility of backfilling the booster tank through the tank to pump suction line.

Tank suction shall be located in a sump assembly located below the bottom of the tank, properly baffled to prevent surging of water. A 3" cleanout plug shall be provided in the bottom of the tank sump.

One (1)  
FH-03-2000

### **BALL VALVE TANK TO PUMP**

A 2-1/2" gated suction shall be provided between the booster tank and the portable pump.

One (1)  
FH-03-6000

### **TANK FILL/COOLING LINE**

A gated discharge line from the pressure side of the pump to the tank shall be furnished so the tank can be filled from draft or hydrant. Valve shall have control on the operator's panel. The valve is to be one and one-half inch, (1-1/2") swing out type ball valve and be plumbed to tank with flexible type hose.

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One (1)  
FJ-00-0202

### **POLY BOOSTER TANK**

The booster tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity.

The transverse swash partitions shall be manufactured of polypropylene and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of polypropylene and extend from the floor of the tank through the cover to allow for positive welding and maximum integrity. 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 welded to each other as well as to the walls of the tank.

A forward mounted sump shall be provided in the tank. The sump shall be constructed of polypropylene and be located in the left front quarter of the tank. A polypropylene pipe shall be installed that will sweep from the front of the tank to the sump location. The sump shall have a 3" N.P.T. threaded coupling on the bottom for a plug. This shall be used as a combination clean out and tank drain. An anti-swirl plate shall be located above the sump.

There shall be two standard tank outlets; one for tank-to-pump suction lines, and one for a tank fill line. All tank couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

The tank shall carry a lifetime warranty from its manufacturer.

One (1)  
FJ-01-0208

### **FILL TOWER**

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of polypropylene and with a minimum dimension of 8" x 14" outer perimeter. The fill tower shall be located in the left front corner of the tank. The fill tower shall have a polypropylene screen and a polypropylene hinged cover. Inside the fill tower shall be fastened a combination vent overflow pipe. The vent overflow shall be polypropylene pipe that is designed to run through the tank and shall be piped behind the rear wheels.

One (1)  
FJ-01-4000

### **BOOSTER TANK**

A 1250-gallon capacity polypropylene booster tank shall be provided.

One (1)  
FJ-02-7600

### **HOT DIP GALVANIZED BOOSTER TANK SUBFRAME**

The booster tank shall be mounted on a steel subframe. Steel subframe shall consist of two (2) longitudinal 3" x 4 pound channels and two (2) 3" x 4 pound channels welded together to form a tank retention cradle. The tank retention cradle shall prevent fore and aft, and side to side movement of the tank. Additional 3" x 4 pound transverse cross member channels shall be installed to support the floor of the booster tank. The cross members shall have a maximum spacing of 20" for the polypropylene tanks. There shall be an additional full-length longitudinal member installed in the center of the tank support

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area. The booster tank shall rest on heavy rubber channels that isolate the polypropylene tank from the subframe.

The booster tank subframe shall be hot dip galvanized after fabrication.

One (1)  
FK-01-1600

### **EXTRUDED ALUMINUM PUMP HOUSE STRUCTURE**

The pump house structure shall be fabricated of extruded aluminum. The structure shall be welded together and have gusset plates on each corner. The pump house shall be mounted separate from the body and chassis and be bolted to the chassis frame rails.

The exposed areas of the pump house structure shall be over laid with polished aluminum treadplate.

One (1)  
FK-01-5500

### **DUNNAGE OVER PUMP**

There shall be a dunnage compartment furnished above the pump. The dunnage compartment shall be as wide as possible from side to side, and be a minimum of 12" deep. The floor shall be bolted in place and removable for access to the pump.

One (1)  
FK-02-1500

### **TOP MOUNTED OPERATOR'S CONTROL PANEL**

All pump discharge controls are to be mounted above the fire pump at a top mounted operator's control panel to provide around the truck visibility.

Specified Speedlay hose beds shall be located directly below the forward portion of the operator control panel.

Access to the top mounted control panel shall be provided from both sides of the truck with a large full width walkway ahead of the control panel.

Access handrails shall be 1 1/4" in diameter extruded aluminum with rubber insert and chrome plated end brackets shall be provided and installed on each side, for easy access to the walkway.

All linkage rods shall be attached using threaded fittings or clevis connectors. Rods that are provided with welded fittings or connections are not acceptable.

All of the controls shall be clearly identified with permanently engraved plate type labels.

A full control panel width polished light hood with a minimum of three (3) Weldon model 2025 sealed light assemblies shall be provided to illuminate the entire top mount pump operator's control console.

Additional polished light hoods with a minimum of two (2) Weldon model 2025 sealed light assemblies shall be provided to illuminate the right and left side pump panels. Lights shall be controlled by the operator's panel light switch.

There shall be two lights surface mounted in the lower forward facing panel to illuminate the walkway.

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### **GAUGE PANEL**

Engine gauges and master pump gauges shall be mounted on the upper incline plane of the gauge and valve control panel. Both the upper gauge panel and lower valve control panel to be full width and completely removable for access to the pump compartment. The valve controls and individual pressure gauges to be located on the lower flat surface of the valve control panel. All valves and control handles shall have removable escutcheons for easy valve service without removing the entire panel. All manually operated valve handles shall have twisted to lock style controls.

One (1)  
FK-02-2400

### **PUMP PANEL PUMP ENGAGEMENT LIGHT**

One (1) light in the control panel light hood shall come on with a successful pump engagement. This shall be in addition to the "OK to Pump" light on the control panel.

One (1)  
FK-02-2600

### **PUMP PANELS**

The top mount pump operator's control console shall be constructed entirely of aluminum, and be coated with black thermo-plastic material.

One (1)  
FK-02-3600

### **RIGHT AND LEFT SIDE PANEL MATERIAL**

The right and left side pump panels shall be constructed entirely of aluminum, and be coated with black thermo-plastic material. The panels are to be completely "bolted" in place for ease of removal.

One (1)  
FK-02-4100

### **PUMP COMPARTMENT SIDE ACCESS DOORS**

The side pump panels shall be provided with a full panel width vertically hinged access doors located in the upper portion of the side panel. The doors shall be approximately 18" high and as wide as possible, and shall be constructed of polished aluminum treadplate. Two (2) flush mounted, push type latches shall be furnished to hold the door closed. The inspection door shall be attached with a stainless steel hinged and have a retainer cable attached to prevent the door from opening too far.

One (1)  
FK-05-0400

### **HEAT PAN ENCLOSURE**

A removable casing constructed of galvanized steel, completely enclosing the underside of the pump compartment and heated by the engine exhaust shall be provided. The heat pan assembly shall include two individual aluminum panels that can be easily removed from their mounting locations. The two outer slide-out panels shall be bolted in place.

One (1)  
FK-10-0010

### **PUMP OPERATORS PANEL**

The following equipment shall be installed on the pump operator's panel.

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One (1)  
FK-10-0300

### APPARATUS MONITORING SYSTEM

The Fire Research **INControl** pressure governor and all-in-one instrument panel uses state of the art programmable microprocessor technology. It will maintain a steady pump discharge pressure by controlling engine speed or hold a selected engine RPM. It offers complete engine control and remote display in a single compact unit. The **INControl** operates in one of two modes, pressure or RPM. In pressure mode the **INControl** maintains a constant pump discharge pressure. The discharge pressure is monitored and compared to the selected pressure setting, the engine RPM is varied to keep the discharge pressure at the selected setting. In RPM mode the **INControl** maintains a constant engine RPM. The pump discharge pressure is monitored and can vary but, as a safety feature it will be limited to an increase of 30 PSI. If the discharge pressure increases 30 PSI the governor will automatically lower the engine RPM to prevent a high pressure surge. The panel has three 4-digit LED displays for pump discharge, pump intake, and engine RPM. The LEDs are more than 1/2" high. There is an LED bar graph to show PSI or RPM setting depending on the mode, and three LED bar graphs that provide a constant display of the battery voltage, engine coolant temperature, and engine oil pressure.

All controls and indicators are located on the front of the control module.

#### Features:

- Power Up in Pressure Mode
- Automatic Regulation of Pump Discharge Pressure
- Manual Control of Pressure or Engine RPM Settings
- Field Programmable Presets
- Diagnostic Capabilities
- No Pressure or RPM Variation When Changing Modes
- Limits Increase of Pressure When in RPM Mode
- Recognition of No Water Condition With Automatic Response
- Interlock Signal Recognition and OK To Pump LED
- Return to Engine Idle With the Push of a Button

The monitoring system shall be furnished, installed and tested by the apparatus body builder.

One (1)  
FK-10-2700

### PRESSURE GAUGES

Class One #LFP220, 2-1/2" diameter liquid filled pressure gauges shall be provided. The gauges are to have white faces with black lettering. The gauges shall read -30 to 600 lbs. Line pressure gauges shall be individually identified with engraved labels.

Individual line pressure gauges are to be mounted adjacent to the corresponding discharge valve control.

Three (3)  
FK-10-2900

There shall be one (1) pressure gauge for each 1-1/2" discharge outlet.

Five (5)  
FK-10-3000

There shall be one (1) pressure gauge for each 2-1/2" discharge outlet.

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One (1)  
FK-10-3100

There shall be one (1) pressure gauge for each deck gun outlet.

One (1)  
FK-10-3300

There shall be one (1) pressure gauge for each booster hose reel.

One (1)  
FK-10-4900

### **CAB MOUNTED PRESSURE GAUGE**

A 2-1/2" Class I pressure gauge shall be mounted within the truck cab, within easy view of the driver, to monitor the pump pressure for Pump-And-Roll operation.

One (1)  
FK-12-5200

### **PUMP PANEL IDENTIFICATION LABELS**

All discharges shall be provided with color-coded labels. Identification labels shall be provided at the discharge control, the discharge outlet, and at the discharge drain valve control, color-coded according to NFPA recommended standards.

One (1)  
FK-12-7100

### **PUMP PANEL WATER TANK LEVEL GAUGE**

A Class One ITF Intelli-tank water tank level gauge shall be provided on the pump operator's panel. The Intelli-tank display features wide angle viewing and four (4) ultra-bright LED's for high visibility, even in direct sunlight. The Intelli-tank utilizes a pressure transducer, ILO of probes, to provide nine (9) accurate levels of indication.

One (1)  
FK-12-7140

### **WATER TANK LEVEL GAUGE IN CHASSIS CAB**

A Class One ITF Intelli-tank water tank level gauge shall be provided in the chassis cab. The Intelli-tank display features wide angle viewing and four (4) ultra-bright LED's for high visibility, even in direct sunlight. The Intelli-tank utilizes a pressure transducer, ILO of probes, to provide nine (9) accurate levels of indication.

One (1)  
FK-12-9200

### **PUMP PANEL FOAM TANK LEVEL GAUGE**

A Class One ITF Intelli-tank foam tank level gauge shall be provided on the pump operator's panel. The Intelli-tank display features wide angle viewing and ultra-bright LED's for high visibility, even in direct sunlight. The Intelli-tank utilizes a pressure transducer, ILO of probes, to provide nine (9) accurate levels of indication.

One (1)  
FK-12-9600

### **PUMP LUBRICATION FITTING**

A grease zerk shall be installed on the pump left side panel, plumbed to the front impeller shaft-bearing cap with relief valve. Grease zerk shall be provided with a dust cap, and identified with an engraved label.

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One (1)  
FK-13-1500

### **UL TEST CONNECTIONS**

A pump pressure and vacuum test block assembly shall be provided and mounted at the pump operator's control panel. The test block assembly shall include plug type caps.

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One (1)  
HA-00-0200

### **HOSEBODY**

The apparatus hose body is to be properly reinforced without the use of angles or structural shapes, and free from all projections that might injure the fire hose.

The main apparatus hose body shall run the full length of the apparatus body from behind the pump panel area to the rear face of the body.

The upper rear interior of the beavertail extrusions on the right and left side shall be overlaid with brushed stainless steel to protect the painted surface from damage by hose couplings

One (1)  
HA-00-0320

### **HOSEBED CAPACITY**

The hose bed will be configured to be 55 cubic feet, unless the desired hose load requires more area.

The hose bed shall hold 1500 ft. of 2-1/2" hose and 200 ft. of 2-1/2" preconnect hose.

One (1)  
HA-00-0400

### **HOSEBED FLOORING**

Floors of the hose beds are to be provided with removable slat style extruded aluminum hose bed gratings, spaced 1/2" apart for proper hose ventilation. Hosebed gratings are easily lifted out of the main hose bed for access to the top of the specified booster water tank.

Two (2)  
HA-00-1600

### **MAIN HOSEBED DIVIDER**

Adjustable hose bed dividers shall be provided in the main hose bed.

The hose bed divider(s) shall be fabricated of 1/4" smooth aluminum sheet stock, welded into a "T" shaped aluminum extrusion for added strength along the bottom edge of the divider.

The divider shall be fully adjustable, mounted using aluminum "C" channel tracks at the front and rear of the divider for full side to side adjustment.

Two (2) hose bed dividers shall be provided.

One (1)  
HD-00-1000

### **LADDER RACK, LADDERS AND PIKE POLES**

An electric ladder rack shall be installed on the right side of the apparatus body, to carry the ladders in a horizontal position above the side compartments. Each electric over hydraulic cylinder shall be 12-volt operated and installed in an area that provides proper protection of electric components.

Ladder rack shall be of the dual pivot arm design with stabilizing arms at the front and rear. Ladder rack assembly shall be located on the right side of the body, above the compartment area.

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There will be friction style clamps on the front and rear of the ladder rack. The ladder rack actuator control switch shall be weatherproof type and located on the right side pump panel in full view of the rack. A safety interlock will be supplied to prevent operation of the rack when hinged compartment doors are open.

Flashing lights facing front and rear shall be installed on the rack and shall be illuminated whenever the rack is in the lowered position. The outward side of the equipment rack that protrudes beyond the body of the apparatus shall be striped or painted with reflective material.

Cast aluminum ladder brackets with chrome plated quick release type mounting clamps shall be provided which hold the ladders to the pivot arm assembly.

A red warning light shall be provided and mounted in the cab to warn the driver when ladder rack is not in the stowed position.

One (1)  
HD-00-2510

### **GROUND LADDERS FURNISHED BY BODY BUILDER**

The body builder shall furnish the ground ladders. See equipment section of this document for make and model of ladders.

One (1)  
HD-00-5100

### **HARD SUCTION HOSE TRAYS**

Hard suction hoses shall be mounted in extruded aluminum, self-draining carrier trays with hold down device. The carrier trays shall be mounted one on each side of body.

One (1)  
HD-00-7015

### **HARD SUCTION HOSE FURNISHED BY BODY BUILDER**

The hard suction hose shall be furnished by the body builder. See equipment section of this document for make and model of hard suction hose.

One (1)  
KB-02-0200

### **ALUMINUM BODY**

The body shall be fabricated of aluminum extrusions, smooth aluminum sheet and aluminum treadplate.

The aluminum extrusion alloy shall be 6061 with a temper rating of T6, and have a tensile strength of 45,000 PSI and yield strength of 40,000 pounds. The aluminum extrusions shall 3" x 3" aluminum tubing and specially designed extrusions where applicable.

The smooth aluminum sheet material alloy shall be 5052 with a temper rating of H32, and have a tensile strength of 33,000 PSI and yield strength of 28,000 pounds.

The aluminum treadplate alloy shall be 3003 with a temper rating of H22, and have a tensile strength of 30,000 PSI and yield strength of 28,000 pounds.

The extrusions shall be designed as structural-framing members with the smooth aluminum and treadplate fabricated to form compartments, hose beds, and floors. All aluminum material shall be welded together using the latest mig spray pulse arc welding system.

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Compartments to be sweep out design and to be water and dust proof. All compartments shall be made to the maximum practical dimensions to provide maximum storage capacity.

All exterior compartments shall have polished aluminum drip moldings installed above the doors where necessary to prevent water from entering the compartments.

Wheel well panels shall be double break formed smooth aluminum that is welded in place. There shall be no visible bolt heads, retention nuts or fasteners on the exterior surface of the panel. To fully protect the wheel well area from road debris and to aid in cleaning, a full depth radius wheel well liner shall be provided. The frame side of the wheel well area on each side of the opening shall be attached to the frame side of the front and rear compartments. All seams on the frame side of the body shall be welded and caulked to prevent moisture from entering the compartments.

The rear wheel wells shall be radius cut for a streamlined appearance. A polished aluminum fenderette shall be furnished at each rear wheel well opening, held in place with stainless steel fasteners.

### **FASTENERS**

All aluminum and stainless steel components shall be attached using stainless steel fasteners.

Compartment door hinges, handrails and running boards shall be attached using minimum 1/4" diameter machine bolt fasteners.

3/16" diameter fasteners shall only be used in nonstructural areas such as; door handles, trim moldings, gauge mounting, etc.

One (1)  
KB-02-0300

### **CS 1/8" ALUMINUM BODY**

The aluminum sheet material used in fabricating the body shall be a minimum of .125 (1/8") in thickness.

One (1)  
KB-02-0420

### **COMPARTMENT FLOORS**

The compartment floors shall be constructed of smooth aluminum material, to match the compartment interior walls.

One (1)  
KB-10-0100

### **BODY DIMENSIONS**

Apparatus body shall be up to 144" long and 96" wide, reference the drawing for actual body length. Body compartments shall be divided into upper and lower areas with the upper area approximately thirteen-inches in depth, and the lower area approximately twenty-three inches in depth. The hose bed shall be 68" wide.

One (1)  
KK-01-1000

### **APPARATUS BODY SUB-FRAME**

The apparatus body subframe shall be constructed entirely of heavy steel structural channel material.

Two full frame lengths, three-inch (3") 4 pound per foot longitudinal steel channels shall form the sides of the body subframe and sides of the water tank cradle. Subframe cross members shall be fabricated with

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three inch (3") 4 pound per foot heavy steel channel cross members welded to the longitudinal body subframe sides and the full length frame pads.

Two full frame length 1/2" x 3" flat steel frame pads shall be attached to the body subframe and rest on top of the chassis frame rails for proper frame weight distribution.

The steel frame pads, longitudinal steel channels and subframe cross members shall be attached to the chassis frame rails using heavy "U" bolt fasteners to allow removal of the subframe and body assembly from the chassis. There shall be a barrier provided between the subframe and body to prevent electrolysis.

The rear subframe and lower body platform support members shall be of the "two piece" design, fabricated of 4.3 lb. Per foot heavy channel and welded to the full length subframe channel liners at the rear.

A minimum of two rear platform support channels shall be provided and constructed of 4.3 lb. Per foot heavy steel material. Each support channel shall have welded in gusset where the support meets the rear subframe rails.

After fabrication the entire subframe assembly shall be hot dip galvanized to prevent corrosion. The hot dip galvanized subframe shall have a lifetime warranty.

One (1)  
KK-02-0400

### **COMPARTMENT VENTS**

All body compartments shall have a minimum of one (1) louvered panel bolted into a wall to provide the proper airflow inside the compartment. There shall be a filter installed behind the louvered panel. The filter shall be accessible for cleaning by removing the louvered panel on the interior of the compartment.

One (1)  
KK-02-0500

### **BODY AND PUMP HOUSE FLEX JOINT**

When equipped with a fire pump, the body and pump house shall be a separate freestanding component forming a true flex joint between the body and pump house. The intent is to allow either to be easily removed as a single unit without disturbing the other and to provide a flex joint between the two modules. Designs where the pump house and body are interjoined as a common unit do not meet the technical requirement of providing a flex joint or the repairability requirement of these specifications.

One (1)  
KK-02-0652

### **WHEEL WELL LINER AND FENDERETTES**

For ease of accessibility and maintenance, wheel well panels shall be double break formed painted smooth plate that is welded in place.

To fully protect the wheel well area from road debris and to aid in cleaning, a full depth (minimum of 25") radius wheel well liner shall be provided. Wheel well liner shall be smooth aluminum to prevent corrosion.

The rear wheel wells shall be radius cut for a streamlined appearance. A polished aluminum fenderette shall be furnished at each rear wheel well opening, held in place with concealed stainless steel fasteners.

## St. Anthony – South Fremont V.F.D., ID

One (1)  
KK-02-3700

### **REAR TOW EYES**

There shall be two tow eyes furnished under the rear of the body and attached directly to each chassis frame rail. There shall be a reinforcement spreader bar connecting the two tow eyes. Tow eyes are to be constructed of 3/8" plate steel with a 4" I.D. hole, large enough for passing through a tow chain end hook.

One (1)  
KK-03-0050

### **APPARATUS COMPARTMENTATION**

There shall be large enclosed compartments on both sides of the body, starting at the front of the hose body and continuing to the rear of the apparatus. These compartments shall be as large as possible, using all available space.

The aluminum treadplate compartmentation tops on each side of the body shall be extended out and downwards a minimum of .50" over the compartment doors forming a drip rail. Corners shall be TIG welded.

Lower or rear face compartments, if specified shall be provided with polished aluminum drip rails.

One (1)  
KK-03-0065

### **HINGED COMPARTMENT DOOR CONSTRUCTION**

All hinged compartment doors shall be of the flush style so that the entire door fits flush against the apparatus body sides. Doors shall be designed, in the closed position, to have the painted edges protected from damage on the tops by forming the treadplate compartment tops into an extended drip edge, on the bottoms by the rub rail.

Doors shall be a minimum 2" thick, fabricated of a minimum of .125 smooth aluminum. Full panel inner compartment door liners shall be provided and constructed of smooth aluminum. The compartment doors shall have a foam panel glued in place between the exterior and interior door skin. Exterior door panels shall be smooth with no welds visible on the exterior skin. Double door compartments shall be equipped with a secondary latch to hold the secondary door in position.

All compartment door hinges shall be full-length piano type constructed of a minimum 14-gauge type 304 polished stainless steel with 3/16" stainless steel hinge pin with dual directional bolt holes for ease of adjustment.

When horizontally hinged lift-up doors are specified, they shall be equipped with heavy-duty gas filled props to hold the doors in the open position. All other hinged doors shall be equipped with spring loaded hold open device specifically designed for use on vertically hinged doors. Door holders shall be bolted in position. The door ajar switches shall be fully enclosed within structural members and shall not extend into the clear door opening.

All compartment doors shall be provided with hollow core weather stripping to provide a weather tight seal at the door opening and to prevent road spray and debris from entering the compartment.

## St. Anthony – South Fremont V.F.D., ID

One (1)  
KK-03-0076

### EXTERIOR DOOR LATCHES

Side exterior compartment doors shall be furnished with a large stainless steel spring loaded D-handle with slam type latches. D-handles shall have the large "bent" D-ring for ease of grabbing the handle even when wearing mitts or gloves.

A non-moisture absorbing gasket shall be installed between the door latch and the door skin panel.

One (1)  
KK-03-2100

### DRIVER SIDE COMPARTMENTS

Three body compartments shall be furnished as follows:

- One compartment ahead of the rear wheels with full height single hinged door.
- One compartment above rear wheel with one lift-up door.
- One compartment behind the rear wheels with full height single hinged door.

One (1)  
KK-04-2100

### PASSENGER SIDE COMPARTMENTS

Three body compartments shall be furnished as follows:

- One compartment ahead of the rear wheels with full height single hinged door.
- One compartment above rear wheel with one lift-up door.
- One compartment behind the rear wheels with full height single hinged door.

One (1)  
KK-50-0580

### REAR BODY CONFIGURATION

Rear apparatus body compartments shall be as follows:

- There shall be one lower compartment with double hinged doors.
- There shall be one upper compartment with a lift-up type door.

One (1)  
KK-50-4200

### FLAT BACK BODY

The rear vertical surface of the body shall be flat from side to side.

Two (2)  
KM-49-1604

### ADJUSTABLE SHELVES

Compartment shelves shall be constructed of .125" smooth Aluminum. Shelves shall have formed edges on three sides for added strength. Shelves shall be fully adjustable, with extruded aluminum unistrut channels provided on the front and rear compartment walls.

Two (2) adjustable shelves shall be provided in the front compartment on the driver's side.

## St. Anthony – South Fremont V.F.D., ID

One (1)  
KM-49-1614

### **SLIDE-OUT TRAY**

Slide-out trays shall be constructed of 3/16" aluminum material. Trays shall have with heavy-duty roller bearing slides with a latch to hold the tray in the "open" and "closed" positions. Tray shall have capacity of 250 pounds.

One (1) slide-out tray shall be provided and mounted on the floor of the compartment in front of the rear wheels on the driver's side.

Two (2)  
KM-50-0100

### **DRIVER SIDE AIR BOTTLE COMPARTMENTS IN WHEELWELL**

SCBA storage compartment shall be provided and located in the driver side rear wheel well of the apparatus body. Compartment door and frame shall be constructed entirely of cast aluminum and have hinged style door. The compartment bottom and rear wall shall be lined with rubber material to protect paint finish of the air cylinder.

Two (2) SCBA storage compartments shall be provided on the driver's side wheel well area.

Two (2)  
KM-50-0250

### **PASSENGER SIDE AIR BOTTLE COMPARTMENTS IN WHEELWELL**

SCBA storage compartment shall be provided and located in the passenger side rear wheel well of the apparatus body. Compartment door and frame shall be constructed entirely of cast aluminum and have hinged style door. The compartment bottom and rear wall shall be lined with rubber material to protect paint finish of the air cylinder.

Two (2) SCBA storage compartments shall be provided on the passenger's side wheel well area.

One (1)  
KR-01-0100

### **EXTRUDED ALUMINUM RUB RAILS**

Full body length polished aluminum rub rails shall be bolted in place on the right and left body sides and in the pump panel area. The rub rails shall extend outward beyond the body sides for protection of the compartments and doors. There shall be a bolt on aluminum corner casting on each rear corner to blend the rear tailboard assembly with the side rub rails.

The side rub rails shall be a heavy extruded aluminum "C" channel.

One (1)  
KR-04-0002

### **SIDE AND REAR OVERLAYS**

Overlay panels shall be constructed of 3003 polished aluminum treadplate. Polished aluminum overlay shall be provided and installed in the following areas:

- The front face of each side compartment.
- The rear body face and vertical area above tailboard and below hose bed.

## St. Anthony – South Fremont V.F.D., ID

- Driver's side and passenger compartment top extending down over side to the compartment doors then forming a drip rail above doors.
- Front face of hose bed above booster tank.

Overlay shall be installed with "Aluminized" stainless steel bolts to prevent corrosion.

One (1)  
KR-04-0010

### **POLISHED COMPARTMENT TOP WELDS:**

The compartment top welds to be polished.

One (1)  
KR-04-3000

### **SLIP-RESISTANT WALKWAY SURFACE**

All exterior surfaces designated as stepping, standing, and walking areas shall have an aluminum slip-resistant overlay material installed. The slip-resistant overlay material shall have a raised serrated surface that will allow moisture to drain out either side. The recessed surface shall be one piece solid material to prevent road spray and debris from entering the top surface from below. The slip-resistant overlay material shall meet the requirements of NFPA 15-7.3. The slip-resistant surface shall be installed in the following areas of the apparatus body:

- Step areas of the side running boards.
- Rear step running board step.
- Walkway and standing platforms

One (1)  
KR-04-4902

### **REAR STEP/RUNNING BOARDS**

The apparatus body running boards and rear step shall be constructed with slip-resistant surface and shall have bright aluminum treadplate trim around the outside edges. Side running boards and rear step shall be removable for ease of service in case of damage.

One (1)  
KR-04-4908

### **REAR STEP/TAILBOARD**

A single piece .188 rear step/tailboard shall be furnished that is a minimum of 12.00" deep and full width of the apparatus body, from rub rail to rubrail. The tailboard shall be provided with a removable casting on each corner for a pleasing appearance.

One (1)  
KR-10-0000

### **HANDRAILS**

Access handrails shall be 1 1/4" in diameter extruded aluminum with rubber insert. Access rail escutcheons and brackets shall be chrome plated and attached with stainless steel bolts. Anchoring of posts and framing members for railings of all types shall be of such construction that the completed railing structure shall be capable of withstanding a load of at least 225 pounds applied in any direction at any point along the rail.

## St. Anthony – South Fremont V.F.D., ID

One (1)  
KR-10-0100

### **REAR HANDRAILS**

Two (2) vertical access handrails shall be provided and mounted on the rear of the apparatus body, one on each side. Each rear handrail to be approximately 48" long.

Three (3)  
KS-01-1800

### **CAST ALUMINUM STEPS**

NFPA approved cast aluminum steps shall be provided and mounted on the apparatus. All access steps shall have a minimum surface area of 35-square inches, and have a slip-resistant standing surface. The step shall be capable of supporting a 500-lb. load.

Three (3) steps shall be provided and located at the rear of the body on the driver's side.

## St. Anthony – South Fremont V.F.D., ID

One (1)  
NA-00-0010

### **ELECTRICAL**

Electrical wiring, hydraulic lines, air system tubing, and control cables shall be fastened to the frame or body structure of the apparatus and shall be furnished with protective looms, grommets, or other devices, so that any such connector and/or wiring will be protected from shear or tear.

The body 12-Volt electrical system shall be designed specifically for the apparatus body. Automatic reset circuit breakers shall be provided and installed in all circuits.

Wiring data shall be provided with the completed apparatus.

The following electrical equipment and lights shall be provided and installed:

One (1)  
NA-00-0080

### **WIRING SYSTEM**

All electrical wiring shall be 14-gauge heavy strand copper with type GXL crosslink high temperature insulation, being circuit function printed every three-inches along its entire length.

Wiring data shall be provided with the completed apparatus.

The following electrical equipment and lights shall be provided and installed:

One (1)  
NA-00-2100

### **TAIL LIGHTS WHELEN LED**

Two (2) Whelen 60R00XRR LED rectangular red stop/tail lights shall be provided and mounted at the rear of the body, one on each side.

One (1)  
NA-00-3550

### **DIRECTIONAL LIGHTS WHELEN LED**

Two (2) Whelen Model 60A00TAR amber arrow directional signal LED lights shall be provided and mounted at the rear of the body, one on each side below the stop/tail lights.

One (1)  
NA-00-5100

### **BACKUP LIGHTS WHELEN LED**

Two (2) Whelen Model 60C00WCR rectangular clear backup LED lights shall be provided and mounted, one on each side at the rear of the body. The backup lights shall be mounted below the rear stop/tail and directional lights.

One (1)  
NA-00-5350

### **CLEARANCE LIGHTS**

There shall be LED clearance marker lights installed meeting all DOT requirements. The vehicle clearance lights shall be recess mounted within the rear center tailboard step.

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One (1)  
NA-00-5400

### **LICENSE PLATE BRACKET**

A license plate mounting bracket shall be provided complete with a chrome-plated shielded indirect type light. Bracket shall be mounted at the rear of the apparatus body.

One (1)  
NA-00-5600

### **BACKUP ALARM**

An automatic, electronic reverse alarm shall be provided and installed. An alarm shall activate whenever the reverse gear is selected in the transmission.

One (1)  
NA-00-6300

### **LOAD MANAGER**

The apparatus shall be equipped with a Kussmaul model 091-79 Automatic Load Shedding System for performing continuous electrical load management. The Load Manager shall have the following features:

- Monitor 12-volt system and detect low voltage.
- Capability to control two (2) loads.
- Automatic reset when voltage rises.
- Adjustable voltage set point.

The load manager shall be protected against reverse polarity and shorted outputs, and be enclosed in an enclosure to enhance EMI/RFI protection. CSFA shall provide for all electrical loads in excess of the NFPA minimum electrical requirements that exceed the alternator output.

One (1)  
NA-01-1000

### **COMPARTMENT LIGHTING**

All side and rear exterior equipment compartments shall be provided with one (1) clear compartment light mounted to the top of the compartment ceiling. Compartment lights shall switch on automatically when the compartment door is opened and switch off when the door is closed.

One (1)  
NA-01-3000

### **OPEN COMPARTMENT/HAZARD WARNING LIGHT**

A red flashing, warning light shall be provided and installed in the driver's compartment to indicate an open passenger or apparatus compartment door. The hazard light shall also be attached to folding equipment racks and light towers as specified. Light shall be properly marked and identified.

One (1)  
NB-02-5200

### **BATTERY DISCONNECT SWITCH**

A master battery on/off switch shall be provided and mounted in a convenient location to the driver. The master battery switch shall disconnect the batteries from all chassis and body accessories.

A "Battery-On" pilot light shall be provided, visible to the driver.

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One (1)  
NB-02-9100

### **DASH MOUNTED EMERGENCY ELECTRICAL SWITCH PANEL**

An electrical switch panel shall be designed and mounted in the cab dash area. All switches shall be provided with back lighted snap-in legend inserts.

### **SWITCHES**

All emergency light switches shall be lighted, rocker style. Switches shall be internally lit when the switch circuit is in the on position. A plug-in identification label is to be provided and installed adjacent to each rocker switch with backlighting provided behind the label.

An internally lighted "master" switch shall be provided and wired through a heavy-duty relay to activate power to the emergency lights.

One (1)  
NB-10-5000

### **REAR STEP LIGHTS**

Two (2) chrome plated lights shall be furnished and installed on the rear face of the body to illuminate the rear step area. Lights shall be wired to the panel light switch at the pump operator's panel.

One (1)  
NB-10-5400

### **ENGINE COMPARTMENT WORK LIGHT**

An engine compartment work light shall be provided complete with a switch mounted on the light head.

One (1)  
NB-10-5600

### **PUMP COMPARTMENT WORK LIGHT**

A pump compartment work light shall be provided and installed within the pump compartment area complete with a switch mounted on the light head.

One (1)  
NB-10-6000

### **UNDER CAB LIGHTING**

There shall be two (2) lights furnished below the chassis cab, one on each side below each door. The lights shall be wired to switch on and off automatically when the cab doors are opened.

One (1)  
NB-10-6800

### **UNDER BODY LIGHTING**

There shall be two (2) lights furnished below the pump house running board, one on each side. The lights shall be wired to turn on and off with a switch located on the pump operator's panel.

One (1)  
NB-10-6900

### **UNDER BODY LIGHTING REAR STEP**

There shall be two (2) lights furnished below the rear step, one on each side. The lights shall be wired to turn on and off with a switch located on the pump operator's panel.

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One (1)  
NB-30-0200

### REAR DECK LIGHTS

Two (2) Unity #AG series, chrome-plated, six-inch rear mounted lights with swivel type mounting bracket and individual switches shall be provided.

One light shall be a **35-watt 75,000 candlepower spot** lamp, and one light shall be a **35-watt 1,100 candlepower flood** lamp.

Two (2)  
NB-30-0630

### TELESCOPING 12 VOLT SPOT/FLOODLIGHTS

Fire Research 12-volt spot/flood light Model LTA530-TC shall be provided and mounted on a side mount/bottom raise type telescopic pole. The light shall be mounted in the pump house area of the apparatus body. The lights shall be wired to the chassis 12-volt system with a switch provided on the light.

One (1)  
NC-03-2000

### ELECTRONIC SIREN

A Code 3 Model 3692 V-CON, 200-watt electronic siren with Hi-Lo and hardwired microphone shall be provided and mounted in the cab.

One (1)  
NC-03-5100

### SPEAKER

DYNAMAX, 100-watt speaker shall be provided and recess mounted in the front bumper of the chassis. The speaker shall be connected to the electronic siren control unit.

One (1)  
NC-05-0109

### 12 VOLT POWER

One (1) three hole 12 volt power point receptacle shall be provided in the back of the compartment over the rear wheels on the driver's side. The power receptacles shall be used for fire department supplied flashlight chargers.

Location: left side compartment over the rear wheels

One (1)  
NE-04-0950

### EMERGENCY LIGHTING

The upper and lower zones "A", "B", "C", "D" of the apparatus shall have the following emergency lighting equipment:

One (1)  
NE-04-6500

### LIGHT BAR

A Code 3 model 2158NFPA1 58" LED light bars mounted on chassis cab roof to meet the NFPA upper zone A lighting requirement. Light bar to have the following equipment.

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- (4) Red LED x wide optic module
- (8) Red LED x directional optic modules

One (1)  
NE-05-0100

### REAR LIGHTS

Two (2) Code 3 model 550F rotating lights mounted on the rear of the apparatus body to meet the NFPA Zone B, C, D upper level lighting requirement. The lights shall be activated through the master emergency light switch located on the electrical console. Each light to have the following equipment.

- (1) 50-watt fast rotator
- 1 Red lens / 1 Amber lens

One (1)  
NE-05-1220

### UPPER ZONE "B, C, D" LIGHT MOUNTING

The upper rear lights designated for Upper Zone "B" shall be mounted on cast aluminum stanchions attached to the apparatus body, one on each side.

One (1)  
NE-05-3800

### ZONE A FRONT LIGHTS

There shall be two (2) Code 3 model 45 LED lights with bezels furnished on the front grill to meet the NFPA Zone A lower level lighting requirement. The lights shall be connected to a relay be activated through the master emergency light switch located on the electrical console.

One (1)  
NE-05-5250

### ZONE B & D SIDE LIGHTS

There shall be two (2) Code 3 model 45 LED lights furnished on each side of the apparatus to meet the NFPA Zone B & D lower level lighting requirement. One light mounted as far forward as possible, and one light mounted as far to the rear as possible. The lights shall be connected to a power supply and be activated through the master emergency light switch located on the electrical console.

One (1)  
NE-05-8700

### ZONE C REAR LIGHTS

There shall be two (2) Code 3 model 45 LED lights furnished on the rear of the apparatus body to meet the NFPA Zone C lower level lighting requirement. The LED lights shall be activated through the master emergency light switch located on the electrical console.

One (1)  
NS-00-0100

### 12 VOLT ELECTRICAL CERTIFICATION

The low voltage electrical system shall be tested and certified per NFPA 1901 requirements.

A certificate of compliance shall be provided with the completed vehicle upon delivery.

Minimum electrical load consists of the total amperage required to simultaneously operate the following in a stationary mode at the incident scene.

- The propulsion engine and transmission.

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- All Clearance and marker lights.
- The communication radio. (Default of 5.0 amps used for testing).
- Illumination of all walking surfaces, the ground at all egress points, controls and instrument panels and 50% of the total compartment lighting load.
- Minimum warning lights required for "Blocking Right of Way" mode.
- The current to simultaneously operate any fire pump, aerial device & hydraulic pumps.
- Anything defined by the purchaser to be critical to the mission of the apparatus.

The first test for the electrical system is the **Reserve Capacity Test**. All the above listed components operate with the engine shut off. After 10 minutes all electrical loads are shut off and the battery system must have adequate reserve power to start the engine.

The second test is the **Alternator Performance Test at Idle**. All the above listed components operate with the engine at an idle. There can be no current draw from the batteries of the apparatus.

The third test is the **Alternator Performance Test at Full Load**. All electrical components shall be activated with the engine operating at governed RPM for two hours. During the test the system voltage can not drop below 11.7-volts or have excessive battery discharge for more than 120 seconds. Any loads not listed in the minimum electrical load may be load managed in order to pass the test.

All of the above tests must be conducted with the engine compartment at approximately 200 degrees.

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One (1)  
PA-01-0002

### PAINTING

All bright metal fittings if unavailable in stainless steel shall be heavily chrome-plated. Iron fittings shall be copper plated prior to chrome plating.

All seams shall be caulked both inside and along the exterior edges with an automotive sealant to prevent moisture from entering between any body panels.

The body and all parts shall be thoroughly washed with grease cutting solvents prior to any sanding. After the body has been sanded and the minor imperfections filled and sanded, the body shall be washed again with a solution to remove any contaminants on the surface. The first coating to be applied is a self-etching primer for maximum adhesion to the body metal. The next three coats shall be an acrylic, urethane, primer surfacer. The primer surfacer coat is to be hand sanded with 600-grit sandpaper to insure maximum gloss of the paint. The last step is the application of at least three coats of Concept Acrylic Urethane two component color.

The fire pump and all rigid discharge and suction plumbing shall be painted silver in color.

While constructing the truck body, all aluminum parts shall be properly fitted on the body. The backside of all aluminum parts shall be sanded smooth of any burrs and sharp edges.

All aluminum parts shall be bolted to the body using stainless steel fasteners. Cadmium plated fasteners are not acceptable.

During reassembly of the apparatus, care shall be exercised in fitting and fastening the parts back in their respective position on the vehicle.

One (1)  
PA-01-0200

### UNDERCOATING

The body subframe shall be undercoated with a heavy-duty automotive type undercoating before the rubber backing and the compartments are attached. After the body has been attached to the subframe and all final items have been installed the entire body assembly shall be undercoated

One (1)  
PA-01-1505

### INTERIOR COMPARTMENT FINISH

The interior vertical walls of the apparatus compartments shall have a smooth swirl finish.

One (1)  
PA-01-3500

### WHEEL PAINTING

The exterior faces of the front and rear wheels, shall be finished painted to match the apparatus body. Wheels shall be properly prepared and finished with primer coats and topcoats as specified.

The outer two-inches of each outside wheel rim shall be painted Silver in color, unless otherwise specified.

## St. Anthony – South Fremont V.F.D., ID

One (1)  
PA-01-4500

### **PAINT BODY TO MATCH CHASSIS**

The apparatus body to be painted to match the chassis.

One (1)  
PA-02-1910

### **LETTERING**

Lettering shall be done in gold leaf mylar letters, shaded in black, and encapsulated in clear mylar. Lettering to be placed on each cab door as directed by fire department. Maximum of fifty (50) letters.

One (1)  
PA-02-2600

Exact lettering requirements shall be determined prior to construction.

One (1)  
PA-02-4010

### **REFLECTIVE SAFETY STRIPE**

A 4" wide 3M brand Scotchlite #680-10 reflective stripe shall be affixed to the perimeter of the vehicle. Striping shall be placed up to 60" above ground level and shall conform to NFPA reflectivity requirements. At least 60% of the perimeter length of each side and width of the rear, and at least 40% of the perimeter width of the front of the vehicle shall have reflective stripe.

The side stripe shall be applied straight across the body.

The stripe shall be white in color.

One (1)  
PC-00-0100

### **IDENTIFICATION & SAFETY LABELS**

A permanent plate shall be installed in the driver's compartment to specify the quantity and type of the following fluids in the vehicle:

1. Engine oil.
2. Engine coolant.
3. Transmission fluid.
4. Pump Transmission Lubrication Fluid.
5. Pump Primer Fluid (If applicable).
6. Drive Axle Lubrication Fluid.
7. Air-conditioning refrigerant.
8. Air-conditioning lubrication oil.
9. Power steering fluid.
10. Transfer case fluid.
11. Equipment rack fluid.
12. Air compressor system lubricant.
13. Generator system lubricant.

When trucks have been UL certified, a permanent plate with pump performance data and serial numbers shall be installed on the pump panel.

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A permanent plate shall be installed in the driver's compartment specifying the maximum number of personnel the vehicle is designed to carry per NFPA standards. It shall be located in an area visible to the driver.

An accident prevention sign stating "DANGER PERSONNEL MUST BE SEATED AND SEAT BELTS MUST BE FASTENED WHILE VEHICLE IS IN MOTION OR DEATH OR SERIOUS INJURY MAY RESULT". The warning sign shall be placed so it is visible from all seating positions.

An accident prevention sign stating "DANGER DO NOT RIDE ON REAR STEP WHILE VEHICLE IS IN MOTION, DEATH OR SERIOUS INJURY MAY RESULT". The warning sign shall be placed so it is visible from the rear step of the vehicle.

If an inlet located at the pump operator's position is valved, it shall be provided with a permanent label that states "WARNING SERIOUS INJURY Or DEATH COULD OCCUR IF INLET IS SUPPLIED BY A PRESSURIZED SOURCE WHEN THE VALVE IS CLOSED".

One (1)  
TA-01-0100

### **OPERATION / SERVICE MANUALS**

The manufacturer shall provide with the vehicle upon delivery, one (1) complete delivery manual. These manuals shall be in a notebook type binder, with reference tabs for each section of the vehicle. Within each section shall be:

1. Individual component manufacturer instruction and parts manuals.
2. Warranty forms for body.
3. Warranty forms for all major components.
4. Warranty instructions and format to be used in compliance to warranty obligations.
5. Wiring diagrams.
6. Installation instructions and drawings for major parts.
7. Visual graphics, electronic photos of installations of major parts.
8. Necessary normal routine service forms, publications and components of body portion of the apparatus.
9. Technical publications on training and instructions for major body components.
10. Warning and safety related notices for personnel protection.
11. Cab and chassis manuals shall be provided.
12. UL Pump Certification sheets, including the Manufacturer's Record of Apparatus construction details.
13. Certificate of Compliance to Electrical Warning System Low Voltage test.
14. Line Voltage Electrical System test certificate.
15. Water tank capacity certificate.

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One (1)  
VA-00-0000

### **ADDITIONAL EQUIPMENT**

The following equipment shall be furnished by the apparatus body builder.

### **LADDERS**

One (1)  
VA-01-0400

A 24-foot, 2-section aluminum fire department extension ladder, ALCO-LITE Model PEL-24, shall be furnished.

One (1)  
VA-01-0425

A 14-foot aluminum roof ladder with folding hooks, ALCO-LITE model PRL-14, shall be furnished.

One (1)  
VA-01-0435

A 10-foot folding aluminum attic ladder, with mounting brackets, ALCO-LITE model FL-10, shall be furnished.

Two (2)  
VA-03-6000

### **HARD SUCTION HOSE**

A 10-foot length of 6" lightweight PVC, flexible fire department suction hose, first quality non-collapsible type, of a design having a low friction loss and which will not collapse under a vacuum of 23".

Hard suction hose to be equipped with lightweight couplings. Long handles on female and rocker lugs on male couplings.

One (1)  
VA-04-3100

### **SUCTION STRAINER**

A 6" NST chrome-plated barrel type suction hose strainer shall be provided.

## St. Anthony – South Fremont V.F.D., ID

One (1)  
1B-00-0500

### **WARRANTY**

We warrant each new motorized fire apparatus manufactured by CENTRAL STATES FIRE APPARATUS for a period of ONE YEAR from the date of delivery, except for chassis and other components noted herein.

Under this warranty we agree to furnish any parts to replace those that have failed due to defective material or workmanship where there is no indication of abuse, neglect, unusual or other than normal service providing that such parts are, at the option of CENTRAL STATES FIRE APPARATUS, made available for our inspection at our request, returned to our factory or other location designated by us with transportation prepaid within thirty days after the date of failure or within one year from the date of delivery of the apparatus to the original purchaser, whichever occurs first, and inspection indicates the failure was attributed to defective material or workmanship.

The warranty on the chassis and chassis supplied components, storage batteries, generators, electrical lamps and other devices subject to deterioration is limited to the warranty of the manufacturer thereof and adjustments for the same are to be made directly with the manufacturer by the customer.

This warranty will not apply to any fire apparatus that has been repaired or altered outside our factory in any way, which in our opinion might affect its stability or reliability.

This warranty shall not apply to those items that are usually considered normal maintenance and upkeep services: including, but not limited to, normal lubrication or proper adjustment of minor auxiliary pumps or reels.

This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on our part. We neither assume nor authorize any person to assume for us any liability in connection with the sales of our apparatus unless made in writing by CENTRAL STATES FIRE APPARATUS.

One (1)  
1B-00-2500

### **5 YEAR ALUMINUM BODY WARRANTY**

Central States Fire Apparatus LLC (CSFA) warrants to the original purchaser only, that the all aluminum body, fabricated by Central States Fire Apparatus, under normal use and with reasonable maintenance, be structurally sound and will remain free from corrosion perforation for a period of FIVE (5) years.

This warranty does not apply to the following items that are covered by a separate warranty: paint finish, hardware, moldings, and other accessories attached to this body. In addition, this warranty does not apply to any part or accessory manufactured by others and attached to this body.

**CENTRAL STATES FIRE APPARATUS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO THE ALUMINUM BODY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND HEREBY DISCLAIMED.**

Central States Fire Apparatus will replace without charge, repair or make a fair allowance for any defect in material or workmanship demonstrated to its satisfaction to have existed at the time of delivery or not due to misuse, negligence, or accident. If Central States Fire Apparatus elects to repair this body, the extent of such repair shall be determined solely by Central States Fire Apparatus, and shall be performed

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solely at the Central States Fire Apparatus factory, or at an approved facility. The expense of any transportation to or from such repair facility shall be borne by the purchaser and is not an item covered under this warranty.

Central States Fire Apparatus will not be liable for damages and under no circumstances will its liability exceed the price for a defective body. The remedies set forth herein are exclusive and in substitution for all other remedies to which the purchaser would otherwise be entitled.

Central States Fire Apparatus will be given a reasonable opportunity to investigate all claims. The purchaser must commence any action arising out of, based upon or relating to agreement or the breach hereof, within twelve months from the date the cause of the action occurred.

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1B-00-3500

### PAINT WARRANTY

The PPG paint performance guarantee will cover the areas of the vehicle finished with the specified product for a period of FIVE (5) years beginning the day the vehicle is delivered to the purchaser.

The areas as outlined on the Guarantee Certificate will be covered for the following paint failures:

#### GUARANTEE INCLUSIONS:

FULL APPARATUS BODY MANUFACTURED AND PAINTED BY CENTRAL STATES FIRE APPARATUS:

- \* Peeling or delamination of the topcoat and/or other layers of paint.
- \* Cracking or checking.
- \* Loss of gloss caused by cracking, checking, or hazing.
- \* Any paint failure caused by defective PPG Fleet Finishes which are covered by this guarantee.

All guarantee exclusions, limitations, and methods of claims are covered in the full certificate provided to the original purchaser.

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1B-01-1000

### SUBFRAME WARRANTY

Subject to the provisions, limitations and conditions set forth in this warranty, Central States Fire Apparatus, LLC (hereby referred to as "seller"), hereby warrants to each original purchaser only that each new hot dip galvanized or stainless steel body subframe (exclusive of paint finish and hardware) is structurally sound and free of all structural defects of both material and workmanship and further warrants that it will maintain such structural integrity. This warranty terminates upon transfer of possession or ownership by original purchaser.

This warranty is conditioned upon normal use and reasonable maintenance of such subframe; prompt written notice of all defects to seller or one of the seller's then authorized dealers in the area; no repair or additions there to except by seller or authorized by it; said defect not resulting from misuse, negligence,

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accident, remount, overloading beyond applicable weight rating by customer or third parties. If any such conditions are not complied with, this warranty shall become void and unenforceable.

Should repairs become necessary under the terms or the warranty, the extent of that repair shall be determined solely by the seller and shall be performed solely at Central States Fire Apparatus, LLC or a repair facility designated by the seller. The expense of any transportation to or from such repair facility shall be that of the purchaser and is not an item covered by this warranty.

Seller reserves the unrestricted right at any time from time to time to make changes in the design of and/or improvements on its products without thereby imposing any obligation on itself to make corresponding changes or improvements in or on its products theretofore manufactured.

**EXCLUSIONS AND LIMITATIONS: THIS MANUFACTURER'S WARRANTY IS PROVIDED IN PLACE OF ANY AND ALL OTHER REPRESENTATIONS OR IMPLIED WARRANTIES. NO PERSON IS AUTHORIZED TO MAKE ANY REPRESENTATIONS OR WARRANTY ON BEHALF OF CENTRAL STATES FIRE APPARATUS, LLC OR ANY OF ITS DISTRIBUTORS OTHER THAN SET FORTH IN THIS MANUFACTURER'S WARRANTY. YOUR RIGHT TO SERVICE AND REPLACEMENT OF PARTS ON THE TERMS EXPRESSLY SET FORTH HERIN ARE YOUR EXCLUSIVE REMEDIES AND NEITHER THE MANUFACTURER NOR ANY OF ITS DISTRIBUTORS SHALL BE LIABLE FOR DAMAGES, WHETHER ORDINARY, INCIDENTAL OR CONSEQUENTIAL.**