

## Rio Vista Fire Department

### COMMERCIAL CHASSIS SPECIFICATIONS

<b>MAKE:</b>	Sterling LT8500
<b>YEAR:</b>	2003
<b>ENGINE:</b>	Cummins ISC 350, 350 HP @ 2000 RPM 2200 RPM Governed Speed 1050 lb./ft. @ 1400 RPM torque
<b>ENGINE EQUIPMENT:</b>	Engine mounted oil check & fill Dual air intake through LH and RH sides w/Donaldson air cleaner Leece Neville 12 volt, 270-amp alternator Three (3) Alliance 931, group 31 batteries, 1950 CCA 18.7 CFM air compressor Pac-Brake exhaust brake for secondary braking requirements Single horizontal muffler, right side mounted Horton Drivemaster On/Off fan drive Cummins supplied engine mounted fuel filter and fuel water separator w/o heater Fleetguard LF-3000 combination full flow/bypass oil filter Fleetguard coolant filter 900 sq.-in. copper/brass radiator Antifreeze to 34 degrees F, ethylene glycol Gates Blue Stripe coolant hoses Constant tension hose clamps for coolant hoses Radiator draincock Air intake warmer Delco 12 volt, 37MT starter
<b>TRANSMISSION:</b>	Allison MD-3060P automatic transmission, 6-speed Magnetic plugs, engine drain Shift lever, electronic control, tunnel/floor mounted Air to oil transmission cooler
<b>FRONT AXLE &amp; SUSPENSION:</b>	Meritor MFS-16-143A front axle rated at 16,000 lbs. Meritor 16.5 x 6 Q+ cast spider cam front brakes Non-asbestos front brake lining Cast iron front brake drums Chicago Rawhide Scotseal Plus XL front oil seals Meritor automatic front slack adjusters TRW TAS-85 power steering Power steering pump 2 Quart power steering reservoir Oil/Air power steering cooler 16,000 lb. flat leaf front suspension Bronze bushings front suspension

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**REAR AXLE &  
SUSPENSION:**

Meritor RT-40-145 R-SRS tandem rear axle rated at 40,000 lbs.  
4.53 Axle Ratio  
Iron rear axle carrier with optional heavy-duty axle housing  
1710 Meritor driveline  
1710 Meritor interaxle driveline  
Driver controlled traction differential both axles  
Meritor 16.5 x 7 Q+ cast spider cam rear brakes  
Non-asbestos rear brake lining  
Cast iron front brake drums  
Chicago Rawhide Scotseal rear oil seals  
Haldex Longstroke 2-Drive axle spring parking chambers  
Meritor automatic rear slack adjusters  
Hendrickson RTR403 rear suspension rated at 40,000 lbs.

**BRAKE SYSTEM  
EQUIPMENT:**

Wabco ABS w/o traction control enhancement  
Parker Haniflex rubber lined, nylon reinforced fabric covered chassis airlines  
Standard brake system valves  
Combo-ABS/Service brake valve with 4-psi crack pressure  
BW AD-9 brake line air dryer w/heater  
Steel air brake reservoirs  
Petcock drain valves on all air tanks

**FRAME &  
WHEELBASE:**

202" Wheelbase, 138" C/A  
3/8" x 3-3/16" x 10-1/4" steel frame  
1/4" x 3-7/16" x 10-3/4" C channel outer frame reinforcement  
12" chrome steel bumper  
Front tow hooks, frame mounted

**FUEL TANK:**

55-gallon rectangular steel fuel tank, right side  
Steel fuel tank brackets  
Reinforced nylon fuel hose  
Fuel cooler  
In tank fuel level sender

**FRONT TIRES,  
HUBS & WHEELS:**

Michelin XZY2, 315/80R 22.5 20 ply tires  
Iron front hubs  
22.5 x 9.00 10-Hub pilot, 5.25 inset 5-hand steel disc front wheels

**REAR TIRES,  
HUBS & WHEELS:**

Michelin XDE M/S, 275/80R 22.5 12 ply tires  
Iron rear hubs  
22.5 x 8.25 10-Hub pilot, 5-hand steel disc rear wheels

**CAB EXTERIOR:**

113" BBC Conventional steel cab  
Rubber cab mounts  
Grab handles LH/RH  
Hood mounted chromed plastic grille  
Fiberglass hood

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Single electric horn  
Single rectangular halogen headlights with bright bezels  
Aerodynamic marker lights  
Front turn signal lamps  
Dual West Coast Mirrors w/8" convex mirrors mounted under main mirrors  
Tinted front and rear windows, door glass  
Manual door window regulators  
8-liter windshield washer reservoir w/o fluid level indicator

### **CAB INTERIOR:**

Base Oasis tan interior  
Molded plastic door panels  
Vinyl floor mats with single insulation  
Dash mounted ashtrays & lighter  
Heater, defroster, air conditioner  
Main fresh air inlet & main recirculation filters  
Automatic self-reset circuit breakers  
12-volt negative ground electrical system  
Center mounted dome light and LH/RH courtesy light in kick panels  
Cab door latches with manual door locks  
EZYRider Mid back air suspension drivers seat w/adjustable lumbar support  
2-man mid back passenger seat  
Vinyl w/vinyl insert drivers seat  
3 point driver & outboard passenger seat belts with retractors  
2-point center passenger seat belt  
Fixed steering column  
2 spoke, 18" black steering wheel  
Driver and passenger interior sun visors

### **INSTRUMENTS & CONTROLS:**

Sterling electronic gauge cluster  
Black gauge bezels  
Multiplex instrument panel  
Low air pressure light and buzzer  
Primary and secondary air pressure gauges  
Dash mounted air restriction gauge  
Cruise control-electronic, controls on steering wheel spokes  
Odometer/trip/hour/diagnostic/voltage display  
Electric fuel gauge  
Electric engine coolant temperature gauge  
Transmission oil temperature gauge  
Engine and trip hour meters  
Electric engine oil pressure gauge  
Electronic speedometer  
Electronic tachometer  
Digital voltage display  
Single electric windshield wiper motor w/delay  
Three position rotary headlamp switch  
One valve parking brake system with warning indicator  
Self-canceling turn signal switch  
Heavy-duty mechanical flasher

2500 Gallon Water Tender

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**PAINT:** Two tone cab paint  
White above bottoms of windows  
Red lower portion

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### **CHASSIS MODIFICATIONS**

One (1)

#### **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)

#### **STEP SURFACE**

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

One (1)

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

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

One (1)

#### **HUB AND LUG NUT COVERS**

Chrome plated lug nut and center hub covers shall be provided on all six outside wheels of the apparatus.

One (1)

#### **FRONT MUD FLAPS**

Heavy-duty, white 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)

#### **REAR MUD FLAPS**

Heavy-duty, white 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)

#### **HORIZONTAL CHASSIS EXHAUST**

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

One (1)

#### **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)

#### **WATEROUS CG-750 GPM SINGLE STAGE FIRE PUMP**

The centrifugal type fire pump shall be a Waterous model CG midship mounted with a rated capacity of 750 GPM. The pump shall meet NFPA 1901 requirements. The pump shall have a PTO drive gearbox.

One (1)

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

A Waterous Model CGK 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 direct mount, high strength, gear drive transmission.

Fire pump shall be driven by a heavy duty 10 bolt PTO capable of enough torque to operate the fire pump at rated capacity for continuous duty. The PTO shall be approved by Allison for this type of service. The PTO shall be of a "Hot Shift" style capable of either full capacity stationary pumping or pump and roll. Stationary pumping shall be done with chassis transmission in neutral.

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)

### **VPE PRIMING SYSTEM**

A high capacity, electrically driven Waterous model VPE rotary vane priming pump shall be provided which is rigidly attached to the pump transmission.

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)

### **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)

### **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)

### **DISCHARGE PRESSURE RELIEF VALVE**

Pump pressure shall be controlled by a Waterous Fire Pump Company automatic relief valve that is capable of operation over a range of 75 to 300 psi net pump pressure. The Relief Valve shall be controlled at the pump operator's position. Relief valve shall have two controls, one for pressure adjustment and the other an on/off control. Pilot valve shall maintain set pressure until manually reset by the pump operator. Relief valves requiring pressure reset after each use of the pump are not acceptable.

Relief pilot valve orifice shall be protected from malfunction due to sand or other sediment in the water by a strainer that can be removed, cleaned, and replaced at the operator's panel while the pump is operating. A relief valves that requires orifice cleaning within or below the pump enclosure is not acceptable.

Operators panel mounted relief valve indicator lights shall be provided. Lights shall include two color-indicating lights to show position of relief valve. A green light shall indicate a fully closed relief valve and an amber light shall display when the valve begins to open.

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Relief valves requiring pressure reset after each use of the pump does not meet the technical fire ground operational requirement of these specifications.

One (1)

### **MANIFOLD DRAIN**

A Waterous 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 push-pull control with chrome plated "T" handle is to be provided and located at the drivers side of the pump house, properly identified as MASTER DRAIN.

One (1)

### **FIRE PUMP WARRANTY**

The Waterous fire pump shall carry the pump manufacturer's two (2) 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)

### **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)

### **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)

### **HEAT EXCHANGER**

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

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

One (1)

### **PUMP SHIFT INDICATOR LIGHTS**

Fire pump shall be driven by a heavy duty 10 bolt PTO capable of enough torque to operate the fire pump at rated capacity for continuous duty. The PTO shall be approved by Allison for this type of service. The PTO shall be of a "Hot Shift" style capable of either full capacity stationary pumping or pump and roll. Stationary pumping shall be done with chassis transmission in neutral. Pump engagement lights and safety interlock

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system for PTO driven pumps that are to be used for Stationary Pumping or Pump and Roll shall be as follows:

- A "Pump Engaged" indicator light shall be provided both in the driving compartment and on the pump operator's panel to indicate that the pump shift has been successfully completed.
- An "OK to Pump" indicator light shall be provided in the driving compartment to indicate that the pump is engaged, the chassis transmission is in neutral, and the parking brake is engaged. An "OK to Pump and Roll" indicator shall be provided in the driving compartment and shall be energized when the pump is engaged, the chassis transmission is in road gear, and the parking brake is released. When the "OK to Pump and Roll" indicator is energized, the "OK to Pump" shall not be energized.
- A "Throttle Ready" indicator shall be provided at the pump operator's panel that is energized when the "Ok to Pump" indicator is energized or when 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 operator's panel unless the chassis transmission is in neutral and the parking brake is engaged, or the apparatus is in "OK to Pump" mode.
- Controls for the pump shift are to be in the cab, and easily accessible.

One (1)

### **WATEROUS PTO PUMP INSTALLATION**

The Waterous PTO 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. PTO drive shaft(s) shall be spin balanced prior to final installation.

One (1)

### **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)

### **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.

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One (1)

### **DRIVER'S SIDE STEAMER INLET**

There shall be one (1) steamer inlet furnished on the driver's side of pump panel. The suction inlet shall have 4 1/2" 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)

### **PASSENGER SIDE STEAMER INLET**

There shall be one (1) steamer inlet furnished on the passenger side of pump panel. The suction inlet shall have 4 1/2" 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)

### **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)

### **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)

### **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)

### **SUCTION VALVE CONTROL**

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

One (1)

### **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.

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One (1)

### **PUMP DISCHARGES**

Each gated discharge outlet shall include a brass, quarter-turn, swing out ball valve. Valves shall be brass with Nylatron ball and seals. All lines to have victaulic couplings or hose with stainless steel fittings installed where flex may occur to 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)

### **GALVANIZED PLUMBING**

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

One (1)

### **DRIVER SIDE DISCHARGE OUTLET**

One (1) 2-1/2" discharge shall be provided on the driver's side pump panel. The 2-1/2" discharge outlet 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. The discharge shall be provided with chrome-plated 30-degree discharge elbow.

One (1)

### **MANUAL VALVE**

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

One (1)

### **PASSENGER SIDE DISCHARGE OUTLET**

One (1) 2-1/2" discharge shall be provided on the passenger's side pump panel. The 2-1/2" discharge outlet 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. The discharge shall be provided with chrome-plated 30-degree discharge elbow.

One (1)

### **MANUAL VALVE**

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

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One (1)

### **DRIVER SIDE REAR DISCHARGE OUTLET**

There shall be one (1) 2-1/2" discharge outlet located on the driver'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)

### **MANUAL VALVE**

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

Three (3)

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

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

One (1)

### **MONITOR PROVISION**

There shall be one (1) three-inch (3") deluge discharge above fire pump. Deluge outlet shall be plumbed with 3" quarter turn, swing out valve and 3" I.D. schedule 40 galvanized 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)

### **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)

### **MANUAL DRAIN VALVE**

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

Two (2)

### **1 3/4" CROSSLAYS ASSEMBLY ABOVE PUMP**

Two 1 3/4" Crosslay hose beds shall be provided. The crosslay hose beds shall be designed to carry 200 feet of 1-3/4" double jacket fire hose. Crosslay hose beds shall be located above the fire pump. The floor of the crosslay hose beds shall be perforated to allow for drainage. Polished stainless steel hose roller assemblies shall be provided at the sides and lower edges of the crosslay opening on each side of the apparatus body.

Crosslay discharges shall be plumbed using rigid pipe or flexible high-pressure hose coupled with stainless steel fittings. The crosslays shall be provided with 2" brass valves, and 2" 90 degree swivel adapters with 1-1/2" NST male outlet threads.

Two (2)

### **MANUAL VALVE**

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

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Two (2)

### **MANUAL DRAIN VALVE**

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

One (1)

### **CROSSLAY HOSEBED COVER**

A .125 polished aluminum treadplate hinged cover shall be provided over the crosslay hose beds complete with full length stainless steel piano hinge and with chrome plated lift handles provided on each side of the cover. Stops shall be provided to hold the cover in the open position or to protect cab or other adjacent body components. The hinge shall be located on the forward section of the cover, closest to the chassis cab.

One (1)

### **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 capacity shall be at least 200 feet of 1" booster hose. Reel shall be plumbed with wire reinforced; high-pressure hose coupled with reuseable stainless steel 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 rear lower compartment.

One (1)

### **MANUAL VALVE**

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

One (1)

### **BOOSTER REEL PLUMBED TO NORMAL PRESSURE SIDE OF PUMP**

The booster reel shall be plumbed to the normal pressure side of the pump using flexible hose.

One (1)

### **PAINTED BOOSTER REEL**

The 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)

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

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

Two (2)

### **BOOSTER HOSE**

Two (2) one hundred (100) foot lengths of 1-inch rubber covered booster hose, high-pressure type at least 800 lbs test, coupled shall be installed on the specified booster hose reel.

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One (1)

### **HOSEREEL REWIND SWITCH**

A bush button hose reel rewind switch shall be located adjacent to the hose reel.

One (1)

### **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)

### **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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### **WATER TANK**

One (1)

#### **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)

#### **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 15" x 15" outer perimeter. The fill tower shall be located in the left front corner of the tank, approximately 32" behind the front of the hose bed. 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)

#### **BOOSTER TANK**

A 2500-gallon capacity polypropylene booster tank shall be provided.

One (1)

#### **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

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

One (1)

### **REAR QUICK DUMP**

A 10" Newton quick dump shall be installed on the rear center of the water tank.

One (1)

The dump valve shall be externally mounted with the dump valve assembly extending through the rear of the apparatus body panel.

One (1)

The control for the rear quick dump shall be electrically operated at the rear of the body.

One (1)

The dump valve shall have electrically operated controls for the quick dump assembly. The controls shall be located near the dump chute. The exterior controls shall have protected, weather-resistant switches with guard.

One (1)

The rear Newton dump valve, furnished on the apparatus, shall be steel, painted to match the apparatus body.

One (1)

There shall be a telescoping extension chute furnished on the dump valve. The telescoping extension chute shall be manually operated and have retention device to hold in the chute in the closed position for travel. The telescoping chute shall be attached to the dump valve with stainless steel bolts.

One (1)

### **EXTERNAL TANK FILL**

An external tank fill shall be provided and installed at the rear of the body. The tank fill shall include a quarter turn 2-1/2" Akron ball valve with a chrome-plated female swivel, plug and chain.

One (1)

### **DRIVER SIDE MOUNTED OPERATOR'S CONTROL PANEL**

All pump suction and discharge controls are to be mounted on the driver side pump operator's panel so as to permit operation of the pump from a central location.

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

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

An additional polished light hood with a minimum of two Weldon model 2025 light assemblies shall be provided to illuminate the right side pump panel. Lights shall be controlled by the operator's panel light switch.

### **GAUGE PANEL**

All gauges shall be suitably enclosed and mounted on a full pump compartment width "hinged" gauge panel constructed of the same material as the pump operators control panel, allowing access to the backside of all gauges and gauge lines. Panel is to include

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a stainless steel piano hinge, flush mounted chrome plated trigger latch, and stainless steel cable end stops. Electrical wiring and all gauge lines shall be properly tie wrapped to prevent kinking or cutting of the lines when the panel is opened.

One (1)

### **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 overlaid with polished aluminum treadplate.

One (1)

### **PUMP PANELS**

The right and left side pump panels shall be constructed entirely of 14-gauge type 304 brushed stainless steel material. The panels are to be completely "bolted" in place for ease of removal.

One (1)

### **PUMP COMPARTMENT ACCESS DOOR**

The passenger's side pump panel shall be provided with a full panel width vertically hinged access door located in the upper portion of the side panel. This door shall be approximately 18" high and as wide as possible, and shall be constructed of brushed stainless steel. 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)

### **PUMP OPERATORS PANEL**

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

One (1)

### **MASTER GAUGES**

Class One #LFP410, 4-1/2" diameter liquid filled pressure gauge registering up to 600-lbs per square inch with 1/4" pipe thread connection. The gauge shall be of the type that will not be injured when subjected to a vacuum. The gauge is to have a white face with black lettering. The gauge is to be located at the right of the gauge panel and labeled "DISCHARGE" with an engraved label.

Class One #LFP410, 4-1/2" diameter liquid filled compound gauge shall be provided on the suction side of the pump registering at least 600-lbs pressure and 30-inches of vacuum. The gauge shall have a white face with black lettering. The gauge is to be located to the left of the master discharge gauge and labeled "INTAKE" with an engraved label.

One (1)

### **PRESSURE GAUGES**

Class One #LFP210, 2-1/2" diameter liquid filled pressure gauges shall be provided. The gauges are to have white faces with black lettering. Line pressure gauges shall be individually identified with engraved labels.

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

Two (2)

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

Three (3)

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

One (1)

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

One (1)

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

One (1)

### **ENGINE THROTTLE**

An electronic vernier engine control throttle shall be provided on the pump operator's control panel for the Cummins electronic engine. The electronic throttle shall be positive locking, crank operated and have a quick release center button. There shall be an engraved identification label provided that reads **THROTTLE**.

One (1)

### **INFORMATION CENTER**

A Class 1 Enfo III master engine gauge and warning device shall be furnished and installed on the pump operator's panel. The device will monitor the following engine systems:

- Engine RPM display
- System voltage display and alarm
- Engine oil pressure display and alarm
- Engine water temperature display and alarm.

One (1)

### **ENGINE HOUR METER**

An engine hour meter shall be provided on the pump operator's panel.

One (1)

### **PUMP HOUR METER**

A pump hour meter shall be provided on the pump operator's panel.

One (1)

### **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)

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

A Class One bar-graph water tank level gauge shall be provided on the pump operator's panel. Bar-graph display shall flash as an indicator when the tank level reaches 25% of capacity. The sending unit is to be easily cleaned and accessible from the front of the booster tank.

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One (1)

### **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.

One (1)

### **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)

### **HOSEBED CAPACITY**

The hose bed will be configured to meet NFPA minimum requirements.

One (1)

### **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. Hose bed gratings are easily lifted out of the main hose bed for access to the top of the specified booster water tank.

One (1)

### **MAIN HOSEBED DIVIDER**

One (1) adjustable hose bed dividers shall be provided in the main hose bed.

The hose bed dividers shall be fabricated of 1/4" smooth aluminum sheet stock, pressed into a "T" shaped aluminum extrusion for added strength along the bottom and front edges 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.

One (1)

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

The ladders and pike poles shall be mounted in the passenger side compartments on individual poly scratch resistant slides. There shall be an aluminum treadplate door on the rear with push button latch for access to the interior of the compartment.

One (1)

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

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

Two (2)

### **HARD SUCTION HOSE TRAYS**

Two (2) hard suction hoses shall be mounted in extruded aluminum, self-draining carrier

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trays with hold down device. The carrier trays shall be mounted on the driver's side of the body.

One (1)

### **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)

### **FOLDING TANK CARRIER**

There shall be a fully enclosed folding tank storage carrier provided on the passenger side of the booster tank and above the lower compartments to carry a portable folding tank. The tank carrier shall hold the folding tank in the vertical position for travel, and fold down over the lower body side for loading and unloading. The folding tank carrier shall be fabricated of smooth aluminum painted to match the body side and have polished aluminum treadplate end caps. There shall be a hinged bracket that is bolted to the top of the lower compartments with rubber stops to prevent the folding tank carrier from touching the body side when in the down position. There shall be a reinforcement plate installed on the compartment top where the folding tank carrier is attached. There shall be two heavy-duty clamps provided to hold the tank in the travel position.

One (1)

### **FOLDING TANK**

The folding tank storage area shall accommodate a 3000-gallon tank.

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### APPARATUS BODY

The apparatus body compartments shall be fabricated of twelve gauge A-60 Galvanneal steel.

The side compartments shall be an integral assembly with the rear fenders.

Circular fender liners shall be provided for prevention of rust pockets and ease of maintenance.

Compartment floors shall be of the sweep out design with the floor higher than the compartment door lip.

Drip protection shall be provided above the doors by means of bright aluminum extrusion or formed bright aluminum treadplate.

The top of the compartment shall be covered with bright aluminum treadplate formed over the edges on the front, rear and outward side. The corners of the aluminum covers shall be "TIG" welded.

All screws and bolts that protrude into a compartment shall have acorn nuts installed to prevent injury and snagging.

### 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)

### BODY DIMENSIONS

Apparatus body shall be up to 192" long and 102" wide, reference drawing for actual body length. Body compartments shall be divided into upper and lower areas with the upper area approximately sixteen-inches in depth, and the lower area approximately twenty-six inches in depth. The hose bed shall be 68" wide.

One (1)

### BODY DIMENSIONS

The tandem axle body shall be 96" wide.

One (1)

### 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

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members shall be fabricated with 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.

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.

One (1)

### **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)

### **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 reparability requirement of these specifications.

One (1)

### **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 galvanized steel 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.

One (1)

### **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

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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)

### **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)

### **SIDE BODY COMPARTMENT ROLL-UP DOOR CONSTRUCTION**

Exterior side equipment compartments so specified shall be equipped with roll-up shutter doors to be installed as specified herein.

The drum assembly shall be fully enclosed and protected from the elements. Pendent plates supporting the door roll assembly shall be bolted in place, adjustable and capable of being removed with common hand tools. Pendent plates and supports that are welded in place do not meet the maintenance and service criteria of these specifications.

One (1)

### **NATURAL FINISH ROLL UP DOORS**

The roll-up doors on each side of the apparatus body shall be natural finish aluminum.

One (1)

### **ROLL UP DOORS**

R.O.M. Robinson brand extruded aluminum shutter style doors with lift bar latch mechanisms and associated hardware shall be provided and installed as specified.

One (1)

### **DRIVER SIDE**

The driver side of the apparatus body shall consist of the following configuration:

One (1)

### **DRIVER SIDE COMPARTMENTS**

Four body compartments shall be furnished as follows:

One full height compartment ahead of the rear wheels with roll-up door.

Two (2) compartments over tandem rear axle with roll-up door.

One full height compartment behind the rear wheels with roll-up door.

One (1)

### **PASSENGER SIDE COMPARTMENTS**

The passenger side of the apparatus body shall consist of the following compartment configuration:

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One (1)

### **PASSENGER SIDE COMPARTMENTS**

Two body compartments shall be furnished as follows:

One compartment ahead of the rear wheels with roll-up door.  
Full depth fender and wheel well liner over tandem rear axle.  
One compartment behind the rear wheels with roll-up door.

One (1)

### **REAR BODY CONFIGURATION**

Rear apparatus body compartments shall be as follows:

There shall be one lower compartment with a fold-down type door.

One (1)

### **FLAT BACK BODY**

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

Two (2)

### **ALUMINUM UNISTRUT CHANNEL**

Extruded aluminum unistrut channel shall be installed in the compartments not containing shelving for the future addition of adjustable shelves if ever required.

Four (4)

### **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.

Location of shelves to be determined by the fire department.

Four (4)

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

Four (4) SCBA storage compartments shall be provided and located in the driver's side rear wheel well of the apparatus body. Compartment doors and frames shall be constructed entirely of cast aluminum and have hinged style doors. The compartment bottoms and rear walls shall be lined with rubber material to protect paint finish of the air cylinders.

Four (4)

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

Four (4) SCBA storage compartments shall be provided and located in the passenger's side rear wheel well of the apparatus body. Compartment doors and frames shall be constructed entirely of cast aluminum and have hinged style doors. The compartment bottoms and rear walls shall be lined with rubber material to protect paint finish of the air cylinders.

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One (1)

### **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.

One (1)

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

### **SIDE AND REAR OVERLAYS**

Overlay panels shall be constructed of 6061-T6 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.
- Drivers 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.

One (1)

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

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

One (1)

The compartment top welds to be polished.

### **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 13-7.3. 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)

### **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)

### **REAR STEP/TAILBOARD**

A single piece .188 rear step/tailboard shall be furnished that is a minimum of 10.00" deep and full width of the apparatus body, from rub rail to rubrail. The tailboard shall be

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provided with a removable casting on each corner for a pleasing appearance.

One (1)

### **HANDRAILS**

Access handrails shall be 1 1/4" in diameter extruded aluminum with rubber insert. Access rail escutcheons and brackets shall be chrome plated brass and attached with stainless steel bolts and locking nuts. 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.

One (1)

### **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.

One (1)

### **REAR FOLDING STEPS**

Six (6) NFPA approved folding steps shall be provided and mounted on the rear of the apparatus, three on each side. 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.

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### **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)

### **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)

### **TAIL & STOP LIGHTS**

Two (2) Weldon #2010 rectangular red stop/tail lights shall be provided and mounted at the rear of the body, one on each side.

One (1)

### **DIRECTIONAL LIGHTS WELDON 2010**

Two (2) Weldon #2010, rectangular amber directional signal lights with black arrows shall be provided and mounted at the rear of the body, one on each side below the stop/tail lights.

One (1)

### **MID MOUNTED TURN SIGNAL**

Mid mounted body turn signals shall be installed recess mounted in the vehicle rub rails. Lights shall be mounted in a rubber grommet for ease of replacement.

One (1)

### **BACKUP LIGHTS WELDON 2010 (RECT)**

Two (2) Weldon #2010, rectangular clear backup 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)

### **CLEARANCE LIGHTS**

There shall be 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)

### **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)

### **BACK UP ALARM**

Back up alarm to be furnished with chassis.

One (1)

### **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 setpoint.

The load manager shall be protected against reverse polarity and shorted outputs, and be enclosed in a metal 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)

### **HIGH IDLE SYSTEM**

There shall be a high idle system furnished and installed on the apparatus. The high idle system shall have an on/off switch located in the chassis on the switch console. The system shall have an interlock that will disable the solenoid if the parking brake is not completely set.

Seven (7)

### **COMPARTMENT LIGHTING**

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

One (1)

### **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)

### **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.

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One (1) A "Battery-On" pilot light shall be provided, visible to the driver.

### **BATTERY CONDITIONER/AIR COMPRESSOR**

A Kussmaul Pump Plus 1200 air compressor/battery conditioner shall be supplied.

The battery conditioner shall be mounted in the cab on the bulkhead at the floor in front of the officer. An aluminum treadplate cover shall be installed over the battery conditioner.

The air compressor shall be installed behind the officer's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

The battery conditioner shall have a switch for selection of operation voltage source. When in the A.C. position it shall operate only from shoreline.

One (1) A bar graph indicator shall be provided and installed on the driver's side of the cab indicating the charge level of the batteries.

### **AUTO-EJECT**

A Kussmaul "Super Auto-Eject" 20-amp automatic disconnect device shall be provided and installed on the 110 volt shoreline connection complete with weatherproof cover and matching plug. The Auto-Eject shall be activated by the chassis starter switch to disconnect the plug. The Super Auto-Eject shall be completely sealed to prevent contamination of the mechanism by inclement weather and road conditions. The Super Auto-Eject shall have an internal switch to open and close the A.C. circuit after the mating connector is inserted and before the connector is removed.

One (1)

### **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 switch shall be provided and wired through a heavy-duty relay to activate power to the emergency lights. Switch shall allow for pre-selection of emergency lights and shall be identified; MASTER SWITCH.

One (1)

### **MAP LIGHT**

One (1) flexible "gooseneck" type map light shall be provided and mounted on the cab dash panel complete with a switch on the light fixture base.

One (1)

### **REAR STEP LIGHTS**

Two (2) chrome-plated lights shall be furnished and installed on the rear face of the body

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to illuminate the rear step area. Lights shall be wired to the panel light switch at the pump operator's panel.

One (1)

### **ENGINE COMPARTMENT WORK LIGHT**

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

One (1)

### **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)

### **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)

### **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 driver's side pump panel.

One (1)

### **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 driver's side pump panel.

One (1)

### **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)

### **TELESCOPING 12-VOLT SPOT/FLOODLIGHTS**

Federal Signal Nightfighter 12-volt spot/flood light Model FL3SF-SB shall be provided and mounted on a telescopic pole in the pump house area of the apparatus body. The light shall be wired to the chassis 12-volt system with a switch provided on the light.

One (1)

### **AIR HORNS**

Two (2) chrome-plated Grover "Stuttertone" air horns shall be provided and mounted on the sides of the engine hood. A pressure protection valve to prevent the use of air horns or other air operated accessories when the system air pressure drops below 80 psi shall be provided.

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Air horns shall be controlled from the following switch positions.

One (1)

One (1) foot switch shall be provided on the driver's side floor for activation of the air horn.

One (1)

One (1) foot switch shall be provided on the passenger's side floor for activation of the air horn.

One (1)

### **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)

### **SPEAKER**

Cast Products Model GS1004, 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)

### **HEADLIGHT FLASHER**

The headlight circuit of the chassis shall be provided with a heavy-duty headlight flasher system designed for emergency vehicles. Flasher shall include override for high beam headlights and controlled by switch located on the electrical module in the chassis cab. Headlight flasher to be turned off when the park brake is set.

One (1)

### **RADIO ANTENNA**

There shall be a universal base for the radio antenna installed on the chassis cab roof. The power and ground wires for the radio shall also be installed.

One (1)

### **EMERGENCY LIGHTING**

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

One (1)

### **LIGHT BAR**

One (1) Code 3 model 574NFPA1 74" mounted on chassis cab roof to meet the NFPA upper zone A lighting requirement. Light bar to have the following equipment.

- (4) 50-watt standard rotators
- (4) 2 step cascade mirrors
- (2) 3 step cascade mirrors

One (1)

### **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.

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Each light to have the following equipment.

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

One (1)

### **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)

### **ZONE A FRONT LIGHTS**

There shall be two (2) Code 3 model OL135 oscillating lights 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)

### **ZONE B & D SIDE LIGHTS**

There shall be three (3) Code 3 model 41-35 halogen flashing 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, one light mounted as far to the rear as possible, and one light mounted between the front and rear lights. The halogen lights shall be connected to a flasher and be activated through the master emergency light switch located on the electrical console.

One (1)

### **ZONE C REAR LIGHTS**

There shall be two (2) Code 3 model 41-35 halogen flashing lights furnished on the rear of the apparatus body to meet the NFPA Zone C lower level lighting requirement. The halogen lights shall be activated through the master emergency light switch located on the electrical console.

One (1)

### **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.
- 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.

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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 cannot 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)

### **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.

Six (6)

### **NATURAL FINISH ROLL UP DOORS**

The roll-up doors on each side of the apparatus body shall be a natural finish aluminum.

One (1)

### **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)

### **INTERIOR COMPARTMENT PAINT**

The interior vertical compartment walls are to be painted white with a black colored spatter finish material.

One (1)

### **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.

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

One (1)

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

The apparatus body to be painted to match the chassis.

One (1)

### **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)

### **LETTERING SHALL BE AS FOLLOWS:**

Lettering information shall be provided by the fire department.

One (1)

### **REFLECTIVE SAFETY STRIPE**

A 6" 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 in an "S" ribbon design.

The stripe shall be white in color.

One (1)

### **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.

A permanent plate shall be installed in the driver's compartment specifying the maximum

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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)

### **OPERATION/SERVICE MANUALS**

The following applicable documentation shall be supplied upon delivery:

- Two (2) copies of Operation/Service manual of the apparatus operations and service manuals supplied by components manufacturers.
- Pump certification including manufactures record of apparatus construction details.
- Certificate of compliance to Electrical Warning System Low Voltage test.
- Water tank capacity certificate.
- Line Voltage Electrical System test certificate.
- (NFPA 19-14.4.1 - 19.14.4.2)
- Certificate of approval for stationary pumping.

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### ADDITIONAL EQUIPMENT

The apparatus body builder shall furnish the following equipment:

#### LADDERS

One (1)

A 24-foot, 2-section aluminum fire department extension ladder, DUO-SAFETY Model 900A, in which the side rails also act as guides for the fly ladder, shall be furnished.

One (1)

A 14-foot aluminum roof ladder with folding roof hooks, DUO-SAFETY Model #775A, shall be furnished.

#### PIKE POLES

One (1)

6-foot pike pole with fiberglass handle and steel hook shall be furnished.

One (1)

10-foot pike pole with fiberglass handle and steel hook shall be furnished.

#### HARD SUCTION HOSE

Two (2)

Two (2) 10-foot lengths of 4" 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" shall be provided.

Hard suction hose to be equipped with lightweight couplings, and shall have long handles on the female and rocker lugs on the male couplings.

One (1)

#### SUCTION STRAINER

One (1)

A 4" NST chrome-plated barrel type suction hose strainer shall be provided.

#### FOLDING TANK

There shall be a portable-folding tank furnished with the apparatus. The folding tank shall have a welded steel frame with a 22-ounce vinyl liner.

The folding tank shall have capacity of 3000 US gallons.

One (1)

#### MONITOR

One (1) Fire Pro 3", 1200 GPM fixed monitor

#### WHEEL CHOCKS

One (1)

A pair of heavy-duty aluminum wheel chocks shall be provided and mounted in underbody slide-out mounting brackets as directed by the fire department. (Non NFPA compliant)

One (1)

#### MISCELLANEOUS HARDWARE

There shall be a bag of miscellaneous hardware included with the apparatus. This bag shall contain nuts and bolts that are commonly used on the apparatus.

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One (1)

### **TRAINING**

Fire Department personnel shall be properly instructed as to the proper use of the entire apparatus including, but not limited to, chassis, fire pump system, the apparatus and all equipment. Training shall be made by a factory trained Specialist who shall be responsible for complete instruction as to operation and maintenance of the chassis, and the completed vehicle.

Training specialist shall remain at the Fire Department for a sufficient amount of time to provide thorough training of all personnel, or as instructed by Chief of the Department. All meals, motel and travel costs shall be the responsibility of the successful bidder.

One (1)

### **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 which has been repaired or altered outside our factory in any way, which in our opinion might effect 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)

### **5 YEAR GALVANNEAL BODY WARRANTY**

CENTRAL STATES FIRE APPARATUS (CSFA) warrants to the original purchaser only, that the all Galvanneal body, fabricated by CENTRAL STATES FIRE APPARATUS, under normal use and with reasonable maintenance, will be structurally sound and will remain free from corrosion perforation for a period of FIVE (5) years.

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This warranty does not apply to the following items which 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 GALVANNEAL BODY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE 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 solely at the 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 consequential 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.

One (1)

### **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.

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

One (1)