

SOUTH COAST FIRE DEPARTMENT

One (1)

Y__N__

FREIGHTLINER M2 CONVENTIONAL CHASSIS

A Freightliner M2 four-door chassis per the following specifications shall be furnished:

ENGINE AND ENGINE EQUIPMENT:

- MBE900-300 6.4L 300HP @2300 RPM; 2500 860 lb/ft @ 1400 R/F/E
- Engine mounted oil check & fill
- Side of hood air intake with firewall mounted Donaldson air cleaner
- Leece Neville 12volt 270 amp 4949PA pad mounted alternator
- Two (2) Alliance 1131 GRP31 12volt 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
- GVG, Fire and Emergency Service Vehicles Engine Warning
- Mercedes Benz Off/Low/High Compression and Exhaust Brake
- Single horizontal muffler w/horizontal tail pipe exhaust, right hand mount
- Horton HT650 frontal air on/off engine fan clutch
- MBE fuel filter
- Full flow oil filter
- 870 square inch radiator
- Antifreeze to -34F, ethylene glycol pre-charged SCA heavy duty coolant
- Rubber coolant hoses
- Constant tension hose clamps for coolant hoses
- Lower radiator guard
- Aluminum flywheel housing
- Air intake warmer
- Delco 12volt 28MT starter

TRANSMISSION AND EQUIPMENT:

- Allison 3000EVS automatic transmission.
- Transmission programming - 5 speed fire & emergency
- 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 - in radiator end tank

FRONT AXLE AND SUSPENSION:

- Meritor MFS-12-143A front axle @ 12,000
- Meritor 16.5 x 5 "Q+" cast spider cam front brake, double anchor, fab shoes
- Fire & emergency severe service, non-asbestos front lining

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- Conmet cast iron front brake drums
- Chicago rawhide Scotseal Plus XL front oil seals
- 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
- Michelin XZE 11R22.5 14 ply front tires
- Front Brake Dust Shields
- 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 single rear axle @23,000#
- 4.89 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 longstroke drive axle spring parking chambers
- Meritor automatic rear slack adjusters
- 23,000# 52" variable rate multi-leaf spring rear suspension
- Spring suspension - no axle spacers
- Standard U-bolt pad
- Michelin XDE M/S 11R22.5 14 ply 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 & wirebraid chassis air lines
- Relay valve w/5-8 PSI crack pressure, no rear proportioning valve
- BW AD-9 brake line air dryer w/heater
- 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

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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 rear most crossmember
- Standard suspension crossmember

CHASSIS EQUIPMENT:

- Three-piece 14" chrome plated 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
- Reinforced Nylon Fuel Hose

CAB EXTERIOR:

- A 154" BBC flat roof conventional cab
- Rubber cab mounts
- Painted plastic integral 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
- 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

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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
- Silencer package for cab w/additional sidewall insulation
- Solid state circuit protection and fuses
- Door activated dome/red map lights, forward LH/RH and rear LH/RH/Center
- Cab door latches with manual door locks
- Bostrom Talladega 910 High-Back Air Suspension Driver's Seat
- 2-Man Mid Back tool box passenger seat
- Full width rear bench seat
- LH/RH integral door panel arm rests
- Vinyl w/Vinyl insert, driver's seat
- Vinyl w/Vinyl insert, passenger's seat
- 3-point fixed d-ring driver & passenger and 3-point center front seat belts
- Adjustable tilt and telescoping steering column
- 450MM (18") Four-Spoke 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/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
- 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

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- 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 - cab color Imron N0214 red
- Chassis - black high solids polyurethane
- Front & rear wheels painted Imron NO214 red

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CHASSIS ADDITIONS AND MODIFICATIONS

One (1) Y__N__

STEP TYPE FUEL TANK

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

One (1) Y__N__

CHASSIS AIR OUTLET CONNECTION

A quick disconnect female air-outlet fitting is to be provided and installed near the drivers door entrance area. The air shall be connected to the proper air reservoir tank of the chassis air system. A matching male fitting is to be provided and shipped loose with the completed apparatus.

The air outlet shall be provided with a one way check valve so the connection can be used as both an inlet and outlet.

One (1) Y__N__

HORIZONTAL CHASSIS EXHAUST

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

One (1) Y__N__

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 CXPA-1000 GPM SINGLE STAGE FIRE PUMP

Y__N__

The centrifugal type fire pump shall be a Waterous model CXK rear mounted with a rated capacity of 1000 GPM. The pump shall meet NFPA 1901 requirements. The pump shall have a PTO drive gearbox.

One (1)

SINGLE STAGE REAR MOUNTED FIRE PUMP

Y__N__

A Waterous Model CXK fire pump shall be rear 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.

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.

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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.

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)

Y__N__

VPO/VPOS OILLESS PRIMING SYSTEM

A Waterous VPO/VPOS oilless priming system shall be supplied with the pump.

One (1)

Y__N__

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)

Y__N__

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)

Y__N__

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.

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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.

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)

Y__N__

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 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)

Y__N__

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)

Y__N__

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)

Y__N__

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.

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One (1)

HEAT EXCHANGER

Y__N__

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.

One (1)

PUMP SHIFT INDICATOR LIGHTS

Y__N__

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 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

Y__N__

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.

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One (1)

INTAKE RELIEF VALVE

Y__N__

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 runningboards, 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

Y__N__

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)

REAR STEAMER INLET

Y__N__

There shall be one (1) steamer inlet furnished on the rear pump panel. The suction inlet shall have 5" 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 rear step.

One (1)

SUCTION CAP DRIVER'S SIDE

Y__N__

The driver'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 PASSENGER SIDE REAR

Y__N__

A 2-1/2" independent gated suction intake shall be provided on the passenger's side rear of body. Intake shall be provided with a quarter turn valve and control handle. The intake shall have a 1/4 turn bronze flange mounted 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.

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One (1) **SUCTION VALVE CONTROL** Y__N__

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

One (1) **HOT DIP GALVANIZED DISCHARGE MANIFOLD** Y__N__

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.

One (1) **PUMP DISCHARGES** Y__N__

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

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 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.

One (1) **GALVANIZED PLUMBING** Y__N__

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.

Three (3) **REAR DISCHARGE OUTLETS** Y__N__

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

Three (3) Y__N__

There shall be three (3) 2-1/2" discharge outlets located at the rear of the body, below the hose bed on the pump panel. The discharge outlets shall have 2-1/2" quarter turn, swing-out valves with controls on pump operator's panel. There shall be chrome-plated 2-1/2" NST adapters that extends through the rear of the body. The discharges shall be provided with a chrome-plated 30-degree discharge elbows.

Three (3) Y__N__

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MANUAL VALVE

Three (3) Discharge valve shall be swing-out type with manual control handle located on pump operator's panel. Y__N__

2-1/2" CAPS AND CHAINS

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

All three (3) 2-1/2" rear discharge outlets shall have chrome-plated caps and chains.

1-3/4" PRECONNECTS

Two (2) Two (2) 1-3/4" discharge outlets located at the rear of the body below the hose bed. The discharges shall be plumbed with two-inch pipe and 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. Y__N__

MANUAL VALVE

One (1) Discharge valve shall be swing out type with manual control handle located on pump operator's panel. Y__N__

MONITOR PROVISION

One (1) 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. schedule 40 galvanized pipe with 3" NPT male thread. The three-inch valve shall have a slow close device. Y__N__

Monitor shall be located at the front of the hose bed area.

MANUAL VALVE WITH SLOW CLOSE

One (1) Discharge valve shall be swing out type, with slow close and manual control handle located at the monitor. Y__N__

MANUAL DRAIN VALVE

One (1) Monitor shall have a 3/4" drain with individual control on the pump panel. Y__N__

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.

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One (1) Monitor shall be Akron 3422 with direct truck mount adapter. Y__N__

NOZZLE

One (1) 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. Y__N__

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.

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

One (1) The foam system shall be plumbed to both 1-1/2" rear preconnects. Y__N__

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) Y__N__

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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)

Y__N__

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)

Y__N__

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)

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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.

One (1)

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The tank shall carry a lifetime warranty from its manufacturer.

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)

Y__N__

BOOSTER TANK

One (1)

Y__N__

A 500-gallon capacity polypropylene booster tank shall be provided.

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

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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 crossmember channels shall be installed to support the floor of the booster tank. The crossmembers 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) The booster tank subframe shall be hot dip galvanized after fabrication.

Y__N__

CENTER REAR MOUNTED PUMP OPERATORS CONTROL PANEL

The fire pump shall be located in the center rear compartment of the apparatus body. All NFPA required gauges and controls shall be installed in the center rear compartment.

All pump suction and discharge controls are to be mounted in the 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 light assemblies shall be provided to illuminate the entire pump operator's control panel.

GAUGE PANEL

All gauges shall be suitably enclosed and mounted on a full pump compartment width gauge panel constructed of the same material as the pump operator's control panel. The gauge panel shall be removable allowing access to the backside of all gauges and gauge lines. Electrical wiring and all gauge lines shall be properly tie wrapped to prevent kinking or cutting of the lines when the panel is opened.

PUMP ACCESS DOORS

There shall be two access panels furnished for the center rear mounted pump, one in each rear side compartment. Each panel shall be approximately 18" high and as wide as possible, and shall be constructed of polished aluminum treadplate. The access panels shall be removable, and have two (2) flush mounted, push type latches to hold the access panel in place.

One (1)

Y__N__

PUMP PANEL PUMP ENGAGEMENT LIGHT

There shall be one light on the operator's panel that will come on with a successful pump engagement.

One (1)

Y__N__

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PUMP PANEL

The rear mount pump panel shall be constructed entirely of aluminum, and be coated with black thermo-plastic material. The panel shall be completely "bolted" in place for ease of removal.

One (1)

Y__N__

PUMP OPERATORS PANEL

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

One (1)

Y__N__

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)

Y__N__

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.

Two (2)

Y__N__

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

Three (3)

Y__N__

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

One (1)

Y__N__

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

One (1)

Y__N__

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)

Y__N__

INFORMATION CENTER

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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 HOURMETER

Y__N__

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

One (1)

PUMP HOURMETER

Y__N__

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

One (1)

PUMP PANEL IDENTIFICATION LABELS

Y__N__

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 WATER TANK LEVEL GAUGE

Y__N__

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)

MICROPHONE JACK

Y__N__

An external microphone jack shall be provided on the rear pump panel. Wiring shall be provided from the microphone jack to the cab for installation to the radio, provided and installed by the Fire Department.

One (1)

UL TEST CONNECTIONS

Y__N__

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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APPARATUS BODY SPECIFICATIONS

One (1) Y__N__

HOSEBODY

The apparatus hosebody 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 hosebody 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) Y__N__

HOSEBED CAPACITY

The hosebed will be configured to be 55 cubic feet, unless the desired hoseload requires more area.

Two (2) 1-1/2" preconnects shall be located above the pump panel and shall contain 200' of 1-3/4" hose in each bed. The passenger's side of the hose bed shall contain the vertically mounted specified ladders.

The remaining portion of the hosebed shall be separated by a divider. The left portion shall be used for fire department storage of hose packs. The right center portion shall be able to hold 1000' of 3" DJ fire hose.

One (1) Y__N__

HOSEBED FLOORING

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

Three (3) Y__N__

MAIN HOSEBED DIVIDER

Adjustable hosebed dividers shall be provided in the main hosebed.

The hosebed divider(s) shall be fabricated of 1/4" smooth aluminum sheet stock, pressed 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.

Three (3) adjustable dividers shall be provided.

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One (1) Y__N__

HINGED ALUMINUM HOSEBED COVERS

Polished aluminum treadplate hosebed covers shall be furnished, extending the full-length and width of the main hosebed.

Covers shall be fabricated of 3/16" polished aluminum treadplate with cross bracing for maximum strength, and to support the weight of a firefighter standing on the covers when closed. The covers shall be of the sloped design for proper water runoff. Each cover to be equipped with a full-length stainless steel piano hinge with chrome plated grab handles at front and rear of each cover. Hosebed covers shall include heavy-duty stops to support them when in the opened position.

One (1) Y__N__

BACKBOARD STORAGE

The area between the front of the body and the back of the cab shall be used for storage of two (2) Fire Department supplied backboards. The front part of the slot shall be a large "hat section" type panel bolted to the front of the body. Velcro straps shall prevent the backboards from sliding out the side of the compartment. The backboards shall be stored separately, one on top of the other to minimize the amount of space required between the front of the body and the back of the cab.

One (1) Y__N__

LADDER STORAGE

An open ladder storage area shall be provided within the main hosebed area. Compartment shall be provided with individual scratch resistant racks for each ladder. Racks shall be designed so that any ladder or tool may be removed without disturbing the other equipment.

One (1) Y__N__

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) Y__N__

HARD SUCTION HOSE FURNISHED BY PURCHASER

The hard suction hose shall be furnished by the purchaser.

One (1) Y__N__

PIKE POLE(S) MOUNTED ABOVE COMPARTMENTS

There shall be room for the pike pole(s) to be mounted on the top of the compartments.

One (1) Y__N__

ALUMINUM BODY

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

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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, hosebeds, and floors. All aluminum material shall be welded together using the latest mig spray pulse arc welding system.

Compartments to be sweepout 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.

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One (1) Y__N__

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) Y__N__

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) Y__N__

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 crossmembers 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 crossmembers 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) Y__N__

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

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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)

Y ___ N ___

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.

One (1)

Y ___ N ___

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)

Y ___ N ___

APPARATUS COMPARTMENTATION

There shall be large enclosed compartments on both sides of the body, starting at the front of the hosebody 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)

Y ___ N ___

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 .125" polished aluminum treadplate. The compartment doors shall have a foam panel glued in place between

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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.

One (1)

Y__N__

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)

Y__N__

DRIVER SIDE

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

One (1)

Y__N__

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)

Y__N__

PASSENGER SIDE COMPARTMENTS

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

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One (1) Y__N__

PASSENGER SIDE COMPARTMENTS

Four body compartments shall be furnished as follows:

- One compartment ahead of the rear wheels with single hinged door.
- Two compartments above lower compartments with two lift-up doors.
- One compartment behind the rear wheels with single hinged door.

One (1) Y__N__

FLAT BACK BODY

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

One (1) Y__N__

REAR ACCESS LADDER

The top of the apparatus shall be accessible from the ground by ladder. The ladder shall be constructed of aluminum tubing and the steps shall have a non-slip surface. The ladder will be located on the right rear of the apparatus.

Four (4) Y__N__

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.

One (1) Y__N__

The locations of the shelves shall be determined prior to construction.

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 500 pounds.

Two (2) Y__N__

The locations of the slide-out tray shall be determined prior to construction.

DRIVER SIDE AIR BOTTLE COMPARTMENTS IN WHEELWELL

SCBA storage compartment shall be provided and located in the driver side rear wheelwell 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 located on the driver's side wheelwell area.

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Two (2)

PASSENGER SIDE AIR BOTTLE COMPARTMENTS IN WHEELWELL

Y__N__

SCBA storage compartment shall be provided and located in the passenger side rear wheelwell 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 located on the passenger's side wheelwell area.

One (1)

EXTRUDED ALUMINUM RUB RAILS

Y__N__

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)

SIDE AND REAR OVERLAYS

Y__N__

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 hosebed.
- 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.

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

One (1)

POLISHED COMPARTMENT TOP WELDS

Y__N__

The compartment top welds to be polished.

One (1)

SLIP-RESISTANT WALKWAY SURFACE

Y__N__

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

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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)

Y__N__

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)

Y__N__

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.

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- One (1) Y__N__
- 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) Y__N__
- 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) Y__N__
- 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) Y__N__
- 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) Y__N__
- 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) Y__N__
- 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.
- One (1) Y__N__

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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)

Y__N__

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)

Y__N__

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)

Y__N__

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)

Y__N__

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)

Y__N__

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.

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- One (1) **BATTERY DISCONNECT SWITCH** Y__N__
- 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.
- One (1) A "Battery-On" pilot light shall be provided, visible to the driver. Y__N__
- 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) **12-VOLT BATTERY CHARGER RECEPTACLE** Y__N__
- There shall be a 12-volt receptacle furnished on the apparatus to accommodate an in station twelve-volt battery charger. The receptacle shall be a male recessed type and have a matching female plug. The recessed male receptacle shall be wired to the battery system.
- One (1) **DASH MOUNTED EMERGENCY ELECTRICAL SWITCH PANEL** Y__N__
- An electrical switch panel shall be designed and mounted in the cab dash area. All switches shall be provided with backlighted 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) **MAP LIGHT** Y__N__
- 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** Y__N__

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- 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) Y__N__
- ENGINE COMPARTMENT WORK LIGHT**
- An engine compartment work light shall be provided complete with a switch mounted on the light head.
- One (1) Y__N__
- 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) Y__N__
- UNDER CAB LIGHTING**
- There shall be four (4) 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) Y__N__
- 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.
- Two (2) Y__N__
- SCENE LIGHT**
- There shall be a Weldon Model 2010, 12-volt 50-watt Scenelight provided and mounted at the rear of the body. Light shall be mounted on an 18-degree downward angled, polished aluminum casting. The light shall be wired through a switch in the chassis cab and be labeled "Rear Scene Light".
- Two (2) rear scene lights shall be provided, one on each side above the rear taillights.
- One (1) Y__N__
- 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.
- One (1) Y__N__
- Air horns shall be controlled from the following switch positions.
- One (1) overhead lanyard control shall be provided in the front of the cab for activation of the air horn. The lanyard control shall be accessible to both the driver and the officer when seated.
- One (1) Y__N__
- ELECTRONIC SIREN**

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One (1)	<p>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.</p> <p>SPEAKER</p>	Y__N__
One (1)	<p>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.</p> <p>RED LIGHT</p>	Y__N__
One (1)	<p>There shall be a steady burning red light furnished on the chassis cab.</p> <p>HEADLIGHT FLASHER</p>	Y__N__
One (1)	<p>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.</p> <p>EMERGENCY LIGHTING</p>	Y__N__
One (1)	<p>The upper and lower zones "A", "B", "C", "D" of the apparatus shall have the following emergency lighting equipment:</p> <p>LIGHT BAR</p>	Y__N__
One (1)	<p>One (1) Code 3 model 556A2 56" mounted on chassis cab roof to meet the NFPA upper zone A lighting requirement. Light bar to have the following equipment</p> <ul style="list-style-type: none">· (2) 50-watt standard rotators· (2) 3-step cascade mirrors· (1) 50-watt fast rotator· (2) 2-step cascade mirrors <p>REAR LIGHTS</p>	Y__N__
One (1)	<p>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.</p> <ul style="list-style-type: none">· (1) 50-watt fast rotator· 1 Red lens / 1 Amber lens <p>UPPER ZONE "B, C, D" LIGHT MOUNTING</p>	Y__N__

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One (1) The upper rear lights designated for Upper Zone "B" shall be mounted on the upper outside corners of the apparatus body, one on each side. Y__N__

ZONE A FRONT LIGHTS

One (1) There shall be two (2) Code 3 model 4135BZ halogen flashing 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. Y__N__

ZONE B & D SIDE LIGHTS

One (1) There shall be two (2) Code 3 model 4135BZ halogen flashing lights with bezels 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 halogen lights shall be connected to a flasher and be activated through the master emergency light switch located on the electrical console. Y__N__

ZONE C REAR LIGHTS

One (1) There shall be two (2) Code 3 model 4135BZ halogen flashing lights with bezels 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. Y__N__

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.

One (1)

Y__N__

INVERTER/BATTERY CHARGER

There shall be a DC to AC power inverter system with an automatic battery charger/conditioner and a 30-amp AC transfer switch furnished on the apparatus. The system shall be wired to automatically charge and maintain the vehicle battery system when connected to the shoreline power. The shore power shall be connected to the system AC output receptacle to supply power to the AC load. When the vehicle is underway and the shoreline power is disconnected, the automatic transfer switch connects the AC output receptacle to the power inverter that obtains power from the 12-volt battery system.

The Inverter/Battery charger shall be a Vanner model 20-1050CUL/CULW AC with the following features and components:

- 1050-Watt Power Inverter.
- Adjustable Battery Charger/Conditioner.
- Automatic Transfer Switch.
- Underwriters Laboratories Listed and Certified.

One (1)

Y__N__

110 VOLT RECEPTACLES

All 110-volt receptacles shall be provided with weatherproof covers. Receptacle shall be mounted on the lower front body area of the apparatus body.

One (1) shall be located at the front lower corner of the body on the driver's side.

Two (2)

Y__N__

REAR BODY 110-VOLT RECEPTACLES

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All 110-volt receptacles shall be provided with weatherproof covers. Receptacle shall be mounted on the rear area of the apparatus body.

Three (3) 120-volt receptacles shall be provided:

Two (2) shall be provided at the rear of the apparatus body, one on each side for the tripod lights.

Two (2)

Y___N___

TELESCOPING QUARTZ LIGHTING

A quartz light shall be provided and mounted on the apparatus, wired to the 110-volt power source. The light shall be UL listed as "Scenelights for Fire Service Use". Light shall be controlled by a switch located on the light head.

Light shall be a Fire Research 500W/110V Nightmaster.

The light shall be attached to a side mounted, top raise telescoping, anodized aluminum pole with retractable tripod stand. The telescoping pole shall have a four (4) foot extension with friction lock mechanism. The telescoping pole shall be prewired with heavy-duty retractile cord with pigtail extending out the bottom of the lower tube.

The tripod bracket shall be attached to the apparatus with quick release mounting bracket and footplate.

The tripod-telescoping pole shall be Fire Research model 600 with model 603 quick release truck mount brackets.

The 500 watt tripod lights shall be mounted at the rear of the body, one each side.

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One (1)

Y__N__

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)

Y__N__

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)

Y__N__

INTERIOR COMPARTMENT PAINT

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

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One (1) Y__N__

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.

One (1) Y__N__

PAINT BODY TO MATCH CHASSIS

The apparatus body to be painted to match the chassis.

One (1) Y__N__

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) Y__N__

Exact lettering requirements shall be provided by the fire department prior to construction.

One (1) Y__N__

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 a Large "Z" design.

The stripe shall be white in color.

One (1) Y__N__

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.

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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 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)

Y ___ N ___

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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One (1)	<p>ADDITIONAL EQUIPMENT</p> <p>The following equipment shall be furnished by the apparatus body builder:</p>	Y__N__
	<p>LADDERS</p>	
One (1)	<p>A 26-foot, 3-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.</p>	Y__N__
One (1)	<p>A 12-foot aluminum roof ladder with folding roof hooks, DUO-SAFETY Model #775A, shall be furnished.</p>	Y__N__
One (1)	<p>A 10-foot folding aluminum attic ladder, DUO-SAFETY model 585-A, shall be furnished.</p>	Y__N__
Two (2)	<p>HARD SUCTION HOSE</p> <p>10-foot length of 3" 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".</p> <p>Hard suction hose to be equipped with 2 1/2" NST lightweight couplings. Long handles on female and rocker lugs on male couplings.</p>	Y__N__
	<p>Two (2) 3" x 10' hard suction hoses shall be provided.</p>	
One (1)	<p>SUCTION STRAINER</p> <p>A 2-1/2" NST chrome-plated barrel type suction hose strainer shall be provided.</p>	Y__N__
	<p>WHEEL CHOCKS</p>	
One (1)	<p>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)</p>	Y__N__
One (1)	<p>MISCELLANEOUS HARDWARE</p> <p>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.</p>	Y__N__

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One (1)

Y__N__

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)

Y__N__

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

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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 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.

One (1)

Y ___ N ___

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.

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* 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.

One (1)

Y__N__

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)

Y__N__

WATER TANK WARRANTY

The water tank shall have a lifetime warranty. A copy of the water tank manufacturer's warranty policy shall be provided with the completed apparatus.