

## Nevada Division of Forestry

One (1)

### CHASSIS

<b>APPLICATION:</b>	2003 International 7400 SFA 4x4
<b>MISSION:</b>	Requested GVWR: 31000. Calc. GVWR: 31000 Calc. Strt/Grade Ability: 42% / 3.48% @ 55 MPH
<b>FUEL ECONOMY:</b>	8.29 MPG @ 55 MPH
<b>DIMENSION:</b>	Wheelbase: 195", CA: 120", Usable CA: 120", Axle to Frame: 75
<b>ENGINE, DIESEL:</b>	(International DT530 Standard Torque) Electro-Hydraulic Fuel System, 50 State, 330 HP @ 2000/2200 RPM, 950 lb-ft. Torque @ 1200 RPM, 2200 RPM Governed Speed, 330 Peak HP (Max) Includes #2 Bell Housing
<b>TRANSMISSION, AUTOMATIC:</b>	(Allison MD-3060PR) Close Ratio, 5-Speed; With PTO Gear and less Retarder.
<b>CLUTCH:</b>	Omit Item (Clutch & Control)
<b>AXLE, FRONT DRIVING TYPE:</b>	(Meritor MX-10-120) Single Reduction, 10,000-lb. Capacity
<b>AXLE, REAR, SINGLE:</b>	(Meritor RS-21-145) Single Reduction 21,000-lb Capacity with 200 Wheel Ends  Gear Ratio: 5.29
<b>CAB:</b>	Conventional Steel
<b>TIRE, FRONT:</b>	(2) 11R22.5 G164 RTD (GOODYEAR) 499 rev/mile, load range H, 16 ply
<b>TIRE, REAR:</b>	(4) 11R22.5 G164 RTD (GOODYEAR) 499 rev/mile, load range H, 16 ply
<b>SUPENSION, RR SPRING, SINGLE:</b>	Vari-Rate; 23,500-lb Capacity, includes 4500-lb. Multileaf Auxiliary

### Description

Base Chassis, Model 7400 SFA 4X4 with 195" Wheelbase, 120" CA, 120" Usable CA, and 75 Axle to Frame.

TOW HOOK FRONT (2) Frame Mounted.

FRAME RAILS Heat Treated Alloy Steel (120,000 PSI Yield); 10.250" x 3.610" x 0.375" (250.4mm x 91.7mm x 9.5mm); 456.0" (11582mm) Maximum OAL

BUMPER, FRONT full Width, Aerodynamic, Chrome Plated Steel; 0.189" Material Thickness

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AXLE, FRONT DRIVING TYPE (Meritor MX-10-120) Single Reduction 10,000-lb Capacity

**Includes**

: DRAIN PLUG, DRIVING FRONT AXLE Magnetic

AXLE, FRONT DRIVING, LUBE (EmGard 75W-90) Synthetic Oil; 1 thru 29.99 Pints

SUSPENSION, FRONT, SPRING Parabolic, Taper Leaf; 10,000-lb Capacity; With Shock Absorbers

**Includes**

:SPRING PINS Rubber Bushings, Maintenance-Free

BRAKE SYSTEM, AIR Dual System for Straight Truck Applications

**Includes**

:AIR COMPRESSOR AIR SUPPLY LINE Through Air Cleaner

:BRAKE CHAMBERS, SPRING (2) Rear Parking

:BRAKE LINES Color Coded Nylon

:DUST SHIELDS, REAR BRAKE

:DUST SHIELDS, FRONT BRAKE

:SLACK ADJUSTERS, FRONT Automatic

:SLACK ADJUSTERS, REAR Automatic

:PARKING BRAKE VALVE Color-Coded Yellow Knob, Located on Instrument Panel

:DRAIN VALVE Twist-Type

:SPRING BRAKE MODULATOR VALVE

:GAUGE, AIR PRESSURE Located in Instrument Cluster Air 1 and Air 2 Gauges;

DRAIN VALVE, AUTOMATIC {Bendix DV-2} With Heater, for Air Tank

AIR BRAKE ABS {Bendix AntiLock Brake System} Full Vehicle Wheel Control System (4-channel)

AIR DRYER {Bendix AD-IP} With Heater

BRAKES, FRONT, AIR CAM S-Cam; 16.5" x 5.0", Includes 20 Sq. In. MGM Long Stroke Brake Chambers

BRAKES, REAR, AIR CAM 16.5" x 7.0", Includes MGM TR3030 Long Stroke Brake Chamber and Heavy duty Spring Actuated Parking Brake

AIR COMPRESSOR {Bendix Tu-Flo 750} 16.5 CFM

STEERING COLUMN Tilting

STEERING WHEEL 2-Spoke, 18" Diam, Black

STEERING GEAR {Sheppard M-100} Power

EXHAUST SYSTEM Single, Horizontal Muffler and Short Tail Pipe, Aluminized Steel; Frame Mounted Right Side

ENGINE EXHAUST BRAKE (PacBrake) for International I-6 Engines

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### ELECTRICAL SYSTEM 12-Volt, Standard Equipment

#### **Includes**

- :BATTERY BOX Steel with Fiberglass Cover; Mounted Right Side, Back of Cab
- :TURN SIGNAL SWITCH Self-Canceling, Headlight Dimmer (with Flash-To-Pass Feature)
- :HEADLIGHTS (2) Sealed Beam Halogen, 5" X 7" Rectangular, with Chrome Plated Bezels
- :HORN, ELECTRIC Single
- :PARKING LIGHT Integral with Front Turn Signal and Rear Tail Light
- :STOP, TURN, TAIL & B/U LIGHTS Dual, Rear, Combination with Reflector
- :STARTER SWITCH Electric Key Operated
- :RUNNING LIGHT (2) Daytime
- :TURN SIGNALS, FRONT Flush Mounted Include Reflectors and Auxiliary Side Turn signals, Solid State Flashers;
- :DATA LINK CONNECTOR In Cab For Vehicle Programming and Diagnostics
- :WINDSHIELD WIPERS Single Motor, Electric, Cowl Mounted
- :WINDSHIELD WIPER SWITCH 2-Speed Integral with Turn Signal Switch with Wash and Intermittent Feature,
- :WIRING, CHASSIS Color-coded and Continuously Numbered

CIGAR LIGHTER

HORN, ELECTRIC (2)

IGNITION SWITCH Keyless

ALTERNATOR (Leece-Neville 4864JB) Brush Type; 12 Volt 270 Amp. Capacity with Self Excite, Includes a 1-Gauge Charging Circuit

Battery System (3) (International) Maintenance-Free 12-Volt 1950 CCA Total

RADIO (Panasonic CQR-111) AM/FM With Cassette Player, Includes Multiple Dual Cone Speakers

#### **Includes**

- :SPEAKERS IN CAB (4) Coaxial with Premium Interior
- :SPEAKERS IN CAB (2) Dual-Cone with Delux Interior

BACK-UP ALARM Electric, 102 DBA

JUMP START STUD Remote Mounted.

ALTERNATOR PULLEY 2.4" Diameter for Increased Alternator Output at idle; for Fire Truck Must Include: Fire Truck Identity Code

HEADLIGHTS Long Life Halogen: for Two Light System

#### **Includes**

- :RUNNING LIGHT (2) Daytime

SWITCH, BODY CIRCUITS, MID for Body Builders; With 6 Switches in Instrument Panel; One Power Module With 6 Channels, 20 Amp Per Channel and 80 Amp Max Output, Switches Control the Power Modules Through Multiplex Wiring, Mounted Battery Box Back of Cab

STARTING MOTOR {Delco-Remy America Inc. MT-41 Type 450} 12-Volt with Thermal Over-Crank Protection

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CIRCUIT BREAKERS Manual-Reset (Main Panel) SAE Type III with Trip Indicators,  
Replaces All Fuses Except For 5-Amp Fuses

FENDER EXTENSIONS Injection Molded TPO

GRILLE Chrome

FRONT END Tilting, Fiberglass, With Three Piece Construction

PAINT SCHEMATIC, PT-1 Single Color, Design 100

**Includes**

:PAINT SCHEMATIC ID LETTERS "GM"

PAINT TYPE Base Coat/Clear Coat, 1-2 Tone

PAINT CLASS Single Custom Color.

CLUTCH Omit Item (Clutch & Control)

ENGINE, DIESEL {International DT530 Standard Torque} Electro-Hydraulic Fuel  
System, 50 State, 330 HP @ 2000/2200 RPM, 950 lb-ft Torque @ 1200 RPM, 2200  
RPM Governed Speed, 330 Peak HP (Max) Includes #2 Bell Housing

**Includes**

:GAUGE, AIR CLEANER RESTRICTION Air Cleaner Mounted  
:CRUISE CONTROL Electronic; Controls Integral to Steering Wheel  
:WET TYPE CYLINDER SLEEVES  
:ENGINE SHUTDOWN Electric, Key Operated  
:GOVERNOR Road Speed, Electronic  
:ENGINE OIL DRAIN PLUG Magnetic  
:OIL FILTER, ENGINE Spin-On Type  
:DAMPER, CRANKSHAFT Viscous  
:FAN Optimized Position  
:ENGINE OIL CHANGE SYSTEM 26 quart Capacity  
:FUEL FILTER Engine Mounted

FAN DRIVE {Horton Drivemaster} Automatic On/Off Type Control, With Normally  
Closed Temperature Control; Use With International I6 Engine

**Includes**

:FAN Nylon

RADIATOR Cross Flow, Series System; CuBrass Radiator Core; with Transmission Cooler; 940  
Sq in Area and 1025 Sq in Charge Air Cooler

**Includes**

:ANTI-FREEZE Texaco Long Life Coolant -40F (-40C)  
:DEAERATION SYSTEM with Polypropylene Tank  
:RADIATOR HOSES Premium, Rubber

AIR CLEANER Single Element

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ENGINE CONTROL, REMOTE MOUNTED Provision for; Includes Wiring for Body Builder Installation of PTO Controls; With Ignition Switch Control

THROTTLE, HAND CONTROL Engine Speed Control; Electronic, Stationary Pre-Set, Two Speed Settings, Mounted on Steering Wheel

ENGINE WATER COOLER {Sen-Dure} Auxiliary, For Use With Fire Trucks

TRANSMISSION, AUTOMATIC {Allison MD-3060PR} Close Ratio, 5-Speed; With PTO Gear and Less Retarder

**Includes**

:TRANSMISSION OIL PAN Magnet in Oil Pan

TRANSFER CASE (Meritor T-4210 2) 2 Spd, 10000 lb-ft Total Capacity, with Provision for PTO, with Electric Over Air Control

TRANSMISSION SHIFT CONTROL (Allison) T-Bar Type; for Allison MD & HD Transmissions

TRANSFER CASE LUBE (EmGard 50W) Synthetic; 1 thru 14.99 Pints

ALLISON WT SPARE INPUT/OUTPUT for Fire Truck/Emergency Vehicles

AXLE, REAR, SINGLE {Meritor RS-21-145} Single Reduction 21,000-lb Capacity with 200 Wheel Ends: Gear Ratio: 5.29

**Includes**

:REAR AXLE DRAIN PLUG (1) Magnetic

SUSPENSION, RR, SPRING, SINGLE Vari-Rate; 23,000-lb Capacity, Includes 4500-lb Capacity Multileaf Auxiliary

FUEL TANK (2) Top Draw; D Style, Steel, 50 U.S. Gal., 189 L Capacity, 16" Deep, With Quick Connect Outlet, Mounted Left & Right Side, Under Cab

**Includes**

:FUEL LINES Nylon Tubing With O-Ring Snap-On Quick-Connect Fittings at Both Ends

CAB Conventional Steel

**Includes**

:CLEARANCE/MARKER LIGHTS (5) Flush Mounted

:ARM REST (2) Molded Plastic, Smoke Gray; One Each Door

:FLOOR COVERING Rubber, Black

:COAT HOOK Located on Rear Wall, Centered Above Rear Window

:GRAB HANDLE, CAB INTERIOR (2) "B" Pillar, One Each Side

:GRAB HANDLE, CAB INTERIOR (2) "A" Pillar Mounted, One Each Side

:STEP (2) Two Steps Per Door

:GLASS, ALL WINDOWS Tinted

GAUGE CLUSER English With English Electronic Speedometer

**Includes**

:ODOMETER DISPLAY, Miles, Trip Miles, Engine Hours, Trip Hours, Fault Code Readout

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:WARNING SYSTEM Low Fuel, Low Oil Pressure, High Engine Coolant Temp, and Low Battery Voltage (Visual and Audible)

:GAUGE CLUSER GAUGES (6) Engine Oil Pressure (Electronic), Water Temperature (Electronic), Fuel (Electronic), Tachometer (Electronic), Voltmeter, Washer Fluid Level

GAUGE, OIL TEMP, ALLISON TRAN

GAUGE, AIR CLEANER RESTRICTION {Filter-Minder} With Black Bezel Mounted In Instrument Panel

SEAT, DRIVER {National} Air Suspension, High Back, Integral Headrest, Vinyl, Isolated, With 2 Position Front Cushion Adjustment, 6 to 17 Degree Seat Back Adjustment, Air Lumbar Support

### **Includes**

:SEAT BELT 3-Point, Lap and Shoulder Belt Type

SEAT, TWO-MAN PASSENGER {Gra-Mag} Integrated Headrest in Both Occupant Positions, Vinyl, Fixed Back, With Under Seat Storage Compartment

### **Includes**

:SEAT BELT (2) One 3-Point Shoulder Belt and One 2-Point Lap Belt

GRAB HANDLE (2) Towel Bar Type Anti-Slip Rubber Inserts, for Cab Entry Mounted Left and Right

MIRRORS (2) {Lang Mekra} Styled; Rectangular, 7.09 x 15.75, Brackets Breakaway Type, With 102 Wide Spacing, With Integral Convex Both Sides, With Bright Finish Head and Brackets

INSTRUMENT PANEL Center Section, Flat Panel

AIR CONDITIONER {International blend-Air} With Integral Heater & Defroster

### **Includes**

:REFRIGERANT Hydrofluorocarbon HFC-134A

:FRESH AIR FILTER

:HEATER HOSES Premium

STORAGE POCKET, DOOR (1) Molded Plastic, Smoke Gray, Full-Length; Mounted on Passenger Door

CAB INTERIOR TRIM Delux; for Crew Cab

### **Includes**

:CONSOLE, OVERHEAD Molded Plastic with Dual Storage Pockets and Retainer Nets and CB Radio Pocket; Smoke Gray with Black Netting Over Storage Pockets

:”A” PILLAR COVER Molded Plastic, Smoke Gray

:HEADLINER Printed Cloth

:INSTRUMENT PANEL TRIM Molded Plastic, Drawbridge Gray with Black Center Section, Hidden Cup Holder and Ash Tray (Pull-Out)

:DOME LIGHT, CAB Rectangular, Center Mounted, Integral to Console Door Activated, Timed Theater Dimming

:SUN VISOR (2) Padded Vinyl Integral to Console with Toll Ticket Strap and with Integral Extenders

:STORAGE POCKET, DOOR (1) Molded Plastic, Smoke Gray, Full-Length, Driver Door

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:CAB INTERIOR TRIM PANELS Molded Plastic, Full-Height; All Exposed Interior Sheet Metal is Covered

:DOOR TRIM PANELS (2) Molded Plastic; Driver and Passenger Doors

CAB REAR SUSPENSION Air Bag Type

WHEELS, FRONT DISC; 22.5" Painted Steel, 10-Stud (285.75MM BC) Hub Piloted, Flanged Nut, Metric Mount, 8.25 DC Rims, With Steel Hubs

**Includes**

:WHEEL SEALS, FRONT Oil Lubricated, Includes Wheel Bearings

WHEELS, REAR DUAL, DISC; 22.5" Painted Steel, 10-Stud (285.75MM BC) Hub Piloted, Flanged Nut, metric Mount, 8.25 DC Rims; With Steel Hubs.

**Includes**

:WHEEL SEALS, REAR Oil Lubricated, Includes Wheel Bearing

(4) TIRE, REAR 11R22.5 G164 RTD (GOODYEAR) 499 rev/mile, load range H, 16 ply

(2) TIRE, FRONT 11R22.5 G164 RTD (GOODYEAR) 499 rev/mile, load range H, 16 ply

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### CHASSIS ADDITIONS AND MODIFICATIONS

One (1)

#### STEP TYPE FUEL TANK

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

The tank shall be able to contain 70 gallons of fuel.

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.

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 DISCHARGE

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

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One (1)

### **500 GPM CROSSMOUNT WITH CUMMINS 4BT3.9 DIESEL**

A Darley Model HM-500 fire pump shall be midship mounted, single stage centrifugal type with a rated capacity of 500 GPM. In addition to meeting NFPA 1901 requirements, it shall be constructed and mounted in accordance with the following specifications.

At time of delivery the pump shall be UL 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.

Suction intakes shall be provided with removable die cast zinc screen designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

Fire pump shall be driven by a Cummins 4BT3.9 diesel engine. The pump shall be coupled direct to the engine and mounted across the chassis frame rails. The pump engine shall have a heavy-duty radiator and a 45-amp alternator. The pump engine shall be connected to the chassis fuel tank with separate fuel system. The pump engine electrical system shall be independent of the chassis electrical system but wired to the chassis batteries. All pump engine controls shall be located on the pump operator's control panel.

The pump casing shall be a three piece, vertically split design, high strength gray iron. The impeller shall be a single suction double hubbed, balanced both mechanically and hydraulically for virtually vibration free operation. Replaceable bronze wear rings shall be provided.

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. Helical cut crown-shaved gears, carbonized and hardened alloy steel shall 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 operators 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, priming system and drain valve shall be manufactured by the Darley 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.

A high capacity, electrically driven rotary vane priming pump shall be provided.

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

A vacuum test with a capped suction of at least 20' long shall develop 22" of vacuum and hold a

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- vacuum with a drop not in excess of 10" in 5 minutes.
- 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) **PUMP PACKING**
- Stuffing box shall be integral with the pump body and be equipped with injection type packing system to permit adjustment or replacement of packing without disturbing the pump. Packing to be injected into the stuffing box from external supply cylinder by a single injection screw. Injection pressures are equalized around the shaft to minimize friction and heat generation. Packing can be renewed by removing the plunger and inserting plastallic packing pellets as needed.
- One (1) **MANIFOLD DRAIN**
- A Darley 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.
- A push-pull control with handle is to be provided and located at the driver's side of the pump house, properly identified as MASTER DRAIN.
- All plumbing lines are required to have manual drain petcocks at their lowest points to allow for winterized, dry storage of apparatus.
- 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.
- One (1) **DRIVER SIDE STEAMER INLET**
- There shall be one (1) steamer inlet furnished on the driver side of pump panel. The suction inlet shall have 4" 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.

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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.

One (1)

### **PUMP DISCHARGES**

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

All plumbing lines are required to have manual drain petcocks at their lowest points to allow for winterized, dry storage of apparatus.

Two (2)

### **DRIVER SIDE DISCHARGE OUTLET**

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

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

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Two (2)

### **MANUAL VALVE**

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

Two (2)

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

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

All 2-1/2" discharges shall have chrome plated caps and chains.

One (1)

### **DRIVER SIDE HOSEBED PRECONNECT**

One (1) 1-1/2" discharge outlet located at the driver's side at the front of the hose bed. Discharge 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.

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 HOSEBED PRECONNECT**

One (1) 1-1/2" discharge outlet located at the passenger's side at the front of the hose bed. Discharge 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.

One (1)

### **MANUAL VALVE**

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

Two (2)

### **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 brass fittings, and have one-inch (1") swing out, ball valve with control on pump operator's panel.

Booster hose reel is to be mounted in the hosebed of the apparatus.

Two (2) booster reels shall be provided, one on each side in front of the hose bed.

Two (2)

### **MANUAL VALVE**

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

Two (2)

### **PAINTED BOOSTER REEL**

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

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Two (2)

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

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

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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### **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 8" x 12" 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)

### **BOOSTER TANK**

A 600-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 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)

### **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.

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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 a stainless steel piano hinge, Hartwell HTL81 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 left panel shall be completely "bolted" in place for ease of removal. The right panel shall be easily removable using positive type latches with chrome plated D-ring handles.

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 polished aluminum treadplate. Two (2) flush mounted, push type latches shall be furnished to hold the door closed. The inspection door shall be attached with a stainless steel hinged and have a retainer cable attached to prevent the door from opening too far.

One (1)

### **DUNNAGE OVER PUMP**

There shall be a dunnage compartment furnished above the pump. The dunnage compartment shall be as wide as possible from side to side, and be a minimum of 12" deep. The dunnage floor shall be easily removable for service to the engine using positive type latches with chrome plated D-ring handles. Access doors shall be provided in the flooring for the checking and maintaining of the auxiliary engine fluids.

One (1)

### **PUMP OPERATORS PANEL**

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

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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.

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.

Two (2)

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

One (1)

### **ENGINE THROTTLE**

A vernier engine control throttle for manually operated engines shall be furnished on the pump operator's control panel. The throttle shall be positive locking, and have quick release button located in the center of the throttle. There shall be an engraved identification label provided to read THROTTLE.

One (1)

### **TACHOMETER**

An engine tachometer to indicate engine revolutions while pumping shall be provided and mounted at the pump operator's panel. Tachometer shall be of the electronic type.

One (1)

### **ENGINE GAUGES AND WARNING DEVICES**

An engine oil pressure gauge shall be provided and installed on the pump operator's panel just below the specified tachometer.

Audible and visual warning devices shall be provided to warn the pump operator of low oil pressure.

An engine water temperature gauge shall be provided and installed on the pump operator's panel, just below the specified tachometer.

Audible and visual warning devices shall be provided to warn the pump operator of high water temperature.

A voltmeter shall be provided and installed at the pump operator's panel.

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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 TLW 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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## APPARATUS BODY SPECIFICATIONS

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

Exact hose bed requirements to be determined during pre-construction conference.

One (1)

### HOSEBED FLOORING

Floors of the hose beds 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.

Two (2)

### 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 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.

Two (2) hose bed dividers shall be provided.

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

Two (2)

### HARD SUCTION HOSE TRAYS

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

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- One (1) Two (2) hose trays shall be provided.
- HARD SUCTION HOSE FURNISHED BY PURCHASER**
- One (1) The hard suction hose shall be furnished by the purchaser.
- 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 144" long and 96" wide, reference 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) **APPARATUS BODY SUB-FRAME**
- The apparatus body subframe shall be constructed entirely of heavy steel structural channel material.
- Two full frame lengths, three-inch (3") 4 pound per foot longitudinal steel channels shall form the sides of the body subframe and sides of the water tank cradle. Subframe cross members shall be fabricated with 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

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rest on top of the chassis frame rails for proper frame weight distribution.

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

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)

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

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

One (1)

### **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 galvanneal 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 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)

### **HINGED COMPARTMENT DOOR CONSTRUCTION**

All hinged compartment doors shall be of the flush style so that the entire door fits flush against

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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 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)

### **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)

### **DRIVER SIDE COMPARTMENTS**

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

One (1)

### **PASSENGER SIDE COMPARTMENTS**

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

One (1)

### **PASSENGER SIDE COMPARTMENTS**

Three body compartments shall be furnished as follows:

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

One (1)

### **REAR BODY CONFIGURATION**

Rear apparatus body compartments shall be as follows:

- There shall be one compartment with full height double hinged doors.

One (1)

### **FLAT BACK BODY**

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

Seven (7)

### **ALUMINUM UNISTRUT CHANNEL**

Extruded aluminum unistrut channel shall be installed in the following compartments for future addition of adjustable shelves.

Unistrut channel shall be supplied in all seven (7) compartments.

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.

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

One (1)

### **SIDE AND REAR OVERLAYS**

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

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

### **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

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

The rear step and lower body behind the rear wheels to be raised 4" higher than the lower body in front of the rear wheels to provide additional clearance for off road performance.

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 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**

Two (2) NFPA approved folding steps shall be provided and mounted on the rear of the apparatus, one 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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One (1)

### **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)

### **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.

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)

### **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.

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One (1)

### **LOAD MANAGER**

The apparatus shall be equipped with a Class 1 Electrical System Manager (ESM) for performing continuous electrical load management. The ESM shall have the following features:

- Load sequencing and shedding.
- Capability to monitor both main and isolated battery banks.
- Fast idle activation output connection.
- Over-voltage indicator.
- Flashing warning for low voltage and battery discharge.
- Display to fit standard rocker switch panel.

The ESM shall be protected against reverse polarity and shorted outputs, and be enclosed in a metal enclosure to enhance EMI/RFI protection.

Seven (7)

### **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)

### **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.

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

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

One (1)

### **MAP LIGHT**

One (1) flexible "gooseneck" type map light shall be provided and mounted on the cab dash panel

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- 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 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.
- One (1) **AIR HORNS**
- Two (2) chrome-plated Grover "Stuttertone" air horns shall be provided and recess mounted in the front bumper extension. 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.
- 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) 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.

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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)

### **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

The light bar shall have red lens on the driver's side, clear lens in the center, and blue lens on the passenger's side.

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. 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.

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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.

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.

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.

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

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mylar. Lettering to be placed on each cab door as directed by fire department. Maximum of fifty (50) letters.

One (1)

Exact lettering requirements shall be determined during the pre-construction conference.

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 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.

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- 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)

### **ADDITIONAL EQUIPMENT**

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

### **LADDERS**

One (1)

A 24-foot, 3-section aluminum extension ladder, ALCO-LITE model PEL3-24, shall be furnished.

One (1)

A 12-foot aluminum roof ladder with folding hooks, ALCO-LITE model PRL-12, shall be furnished.

One (1)

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