

# Raton Fire & Emergency Services

## 3000 Gallon Tender

### **INTENT OF SPECIFICATION**

It is the intent of these specifications to cover our bid for furnishing and delivery to the purchaser of a complete apparatus equipped as hereinafter specified. With a view to obtaining the best results and the most acceptable apparatus for service in the fire department, these specifications cover the general requirements as to the type of construction, together with certain details as to finish, equipment and appliances with which the successful bidder must conform. Minor details of construction and materials where not otherwise specified are left to the discretion of the contractor, who will be solely responsible for the design and construction of all features.

### **ADHERENCE TO SPECIFICATIONS**

Each proposal must be submitted in the same order as the customer specification for ease of comparison. Each item must be marked showing compliance, equivalent or does not comply. All exceptions to the specification must be explaining in detail on a separate page. Those items that are different by brand, model number (when applicable), and operational performance must be clearly defined and listed separately on a document clearly identified as "Clarifications and Substitutions". Vendors failing to comply with this request are subject to immediate rejection without further cause. (NO EXCEPTIONS)

### **SAFETY REQUIREMENTS**

The unit specified shall meet all State and Federal safety standards and laws that are in effect on the date of the bid for the item(s) that are being specified and the particular use for which they are meant.

### **QUALITY AND WORKMANSHIP**

The design of the apparatus shall embody the latest approved automotive engineering practices, experimental designs and methods shall not be acceptable. The workmanship shall be of the highest quality in its respective field. Special consideration is given to the following points: accessibility of the various units that require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry loads as specified.

### **DELIVERY & TERMS**

The successful bidder shall agree to furnish the apparatus within **180 to 210** calendar days after the receipt of order. The apparatus shall be paid in full upon acceptance by the Fire Department in Raton, NM.

### **GENERAL CONSTRUCTION**

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The complete apparatus, assemblies, subassemblies, component parts and so on, will be designed and constructed with due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is to be subjected when placed in service. All parts of the apparatus will be strong enough to withstand the general service under full load. The apparatus will be so designed that the various parts are readily accessible for lubrication, inspection, adjustment and repair.

The apparatus will be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between the front and rear axles, that all specified equipment, including a full compliment of specified ground ladders, full water tank, loose equipment, and firefighters; will be carried without overloading or injuring the apparatus.

**OPERATION AND SERVICE DOCUMENTATION** Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

The documentation will address at least the inspection, service, and operations of the fire apparatus and all major components thereof. The manufacturer shall also provide documentation of the following items for the entire apparatus and each major operating system or major component of the apparatus:

1. Manufacturers name and address
2. Country of manufacture
3. Source of service and technical information
4. Parts and replacement information
5. Descriptions, specifications, and ratings of the chassis and pump
6. Wiring diagrams for low voltage and line voltage systems to include the following information: representations of circuit logic for all electrical components and wiring, circuit identification, connector pin identification, zone location of electrical components, safety interlocks, alternator-battery power distribution circuits, and input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
7. Lubrication charts
8. Operating instructions for the chassis, any major components such as a pump and any auxiliary systems
9. Precautions if applicable
10. Instructions regarding the frequency and procedure for recommended maintenance
11. Overall apparatus operating instructions
12. Safety considerations
13. Limitations of use
14. Inspection procedures
15. Recommended service procedures
16. Troubleshooting guide
17. Apparatus body, chassis, and other component manufacturers warranties
18. Special data required by this standard

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19. Copies of required manufacturer test data or reports, manufacturer certifications, and independent third-party certifications of test results (Mid-ship Pump)

**MANUFACTURING LABELS** Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

A permanent plate shall be mounted in a compartment specifying the quantity and type of the following fluids that may be used in the apparatus for normal maintenance. Where a fluid is not applicable to the unit, the plate shall be marked N/A to inform the service technician who may not be familiar with the apparatus.

- Engine oil
- Engine coolant
- Transmission fluid
- Pump transmission fluid
- Pump primer fluid
- Drive axle fluid
- Air conditioning refrigerant
- Power steering fluid
- Cab tilt mechanism fluid
- Transfer case fluid
- Equipment rack fluid
- Air compressor system lubricant
- Generator system lubricant
- Front tires air pressure
- Rear tires air pressure

**REQUIRED LABELS:** Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

**SEAT BELT SIGN:** 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.**” shall be visible from each seating position.

**SEATING CAPACITY SIGN:** A permanent sign shall be installed in the drivers compartment specifying the maximum number of personnel the vehicle is designed to carry (seating capacity) per NFPA standards. It shall be located in an area visible to the driver and shall read “**SEATING CAPACITY (2)**”.

**ACCIDENT PREVENTION SIGN:** An accident prevention sign stating “**Danger Do Not Ride On Rear Step While Vehicle Is In Motion, Death Or Serious Injury May Result**” shall be placed so it is visible from the rear step of the vehicle. A similar sign shall be placed on the top mount walkway.

**SUCTION INLET SIGN:** If an inlet located at the pump operator’s position is valved,

it shall be provided with a permanent label that states “**Warning Death Or Serious**

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**Injury Could Occur If Inlet Is Supplied By A Pressurized Source When The Valve Is Closed".**

**OVERALL TRAVEL CLEARANCE PLATE:** There shall be a travel clearance warning label located in the chassis cab. The travel clearance warning label to be located in easy view of the driver. The travel clearance warning label to include the following information: **Overall travel clearance height in feet and inches.**

**GVW SIGN:** The manufacturer shall supply the final manufacturer's furnished certification of GVWR and GAWR on a nameplate affixed to the vehicle.

**TYPE OF FUEL SIGN:** A “**Diesel Fuel Only**” name tag shall be attached to fuel fill access door.

**FINAL STAGE LABEL:** A nameplate shall certify that the completed vehicle conforms to the motor vehicle safety standards previously certified by the chassis manufacturer and that the final stage Manufacturer has not altered the certification. All nameplates and instruction plates shall be metal or plastic with the information permanently engraved, stamped, or etched thereon. Metal nameplates to be installed with plated screws. All nameplates to be mounted in a conspicuous place.

## **OEM WARRANTY**

Each Bid will include complete warranty information and time period. The information will include but not be limited to chassis, body, paint, electrical and all individual systems included on apparatus. Quality and coverage of warranty will be considered as part of bid evaluation.

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## **APPARATUS CHASSIS**

**APPARATUS CHASSIS** Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

**Model:** 2010 (or newer) Navistar 7400 SFA 6X6

**Front Axle Load (lbs):** 14000

**Type:** Full Truck Rear Axle Load (lbs) 40000

**G.V.W. (lbs):** 56000 Calc. 53220

### **APPLICATION ROAD CONDITIONS:**

Intended Service: Fire Engine – Support Tender  
type 2, Tactical Tender type 1 and Type 4 engine

Wheelbase (in): 212 Cab to Axle (in): 132.2

### **FRAME & EQUIPMENT**

10.125" Steel Rails, Steel Crossmembers,  
10ft Steel "C" Frame Insert

TOW HOOK, FRONT (2) Inside Rail, Frame Mounted.

BUMPER, FRONT Full Width, Painted Steel and diamond plate per department design

WHEELBASE RANGE 199" (505cm) Through and Including 254" (645cm)

AXLE, FRONT DRIVING {**Meritor MX-14-120**} 14,000-lb Capacity

SUSPENSION, FRONT, SPRING Parabolic, Taper Leaf; 14,000-lb Capacity; With  
Shock Absorbers

Includes

: SPRING PINS Rubber Bushings, Maintenance-Free

BRAKE SYSTEM, AIR Dual System for Straight Truck Applications 48/50 98

Includes

: AIR COMPRESSOR AIR SUPPLY LINE International Engines, Naturally-Aspirated :

BRAKE CHAMBERS, SPRING (2) Rear Parking

: BRAKE LINES Color Coded Nylon, covered in flame proof material between frame  
and wheels

: DRAIN VALVE Twist-Type

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

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

: SLACK ADJUSTERS, FRONT Automatic

: SLACK ADJUSTERS, REAR Automatic

: SPRING BRAKE MODULATOR VALVE

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 {Meritor-Wabco System Saver 1200} Mounted in Standard Location  
BRAKES, FRONT, AIR CAM S-Cam; 16.5" x 5.0"; Includes 20 Sq. In. MGM Long Stroke Brake Chambers

BRAKES, REAR, AIR CAM S-Cam; 16.5" x 7.0"; Includes 36/36 Sq. In. MGM Spring Actuated Parking Brake Chambers

AIR COMPRESSOR {Bendix Tu-Flo 750} 16.5 CFM Capacity

DUST SHIELDS, FRONT BRAKE

DUST SHIELDS, REAR BRAKE

STEERING COLUMN Tilting

STEERING WHEEL 2-Spoke, 18" Diam., Black

STEERING GEAR {Sheppard M-100} Power

EXHAUST SYSTEM Single Horizontal, After treatment Device, Frame Mounted Right Side, Under Cab, Includes **Vertical** Tailpipe an guard

EXHAUST BRAKE, DLOGIC {Diamond Logic} for MaxxFace 9 / DT570, MaxxFace 10 / HT570 Engines; Exhaust Brake, Electronically Activated

ELECTRICAL SYSTEM 12-Volt, Standard Equipment

### **DESCRIPTION**

: DATA LINK CONNECTOR For Vehicle Programming and Diagnostics In Cab

: FUSES, ELECTRICAL SAE Blade-Type

: HEADLIGHT DIMMER SWITCH Integral with Turn Signal Switch

: HORN, ELECTRIC Single

: JUMP START STUD Located on Positive Terminal of Outermost Battery

: PARKING LIGHT Integral with Front Turn Signal and Rear Tail Light

: RUNNING LIGHT (2) Daytime, Included With Headlights

: STARTER SWITCH Electric, Key Operated

: STOP, TURN, TAIL & B/U LIGHTS Dual, Rear, Combination with Reflector

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: TURN SIGNAL SWITCH Self-Cancelling, Headlight Dimmer (with Flash-To-Pass Feature)  
: TURN SIGNALS, FRONT Includes Reflectors and Auxiliary Side Turn Signals, Solid State Flashers; Flush Mounted  
: WINDSHIELD WIPER SWITCH 2-Speed with Wash and Intermittent Feature, Integral with Turn Signal Switch  
: WINDSHIELD WIPERS Single Motor, Electric, Cowl Mounted  
: WIRING, CHASSIS Color Coded and Continuously Numbered

3 way CIGAR LIGHTER wired hot to battery

ALTERNATOR {Leece-Neville 4949PA} Brush Type; 12 Volt 270 Amp. Capacity, Pad Mounted

BODY BUILDER WIRING Back of Standard Cab at Left Frame or Under Extended or Crew Cab at Left Frame; Includes Sealed Connectors for Tail/Amber Turn/Marker/Backup/Accessory Power/Ground and Sealed Connector for Stop/Turn

BATTERY SYSTEM {Delphi W1150D} Maintenance-Free (3) 12-Volt 1950CCA Total

AM/FM Weatherband Radio with dual speakers.  
SPEAKERS IN CAB: (2) Dual-Cone with Delux Interior  
SPEAKERS IN CAB: (4) Coaxial with Premium Interior

HEADLIGHTS Halogen; Composite Aero Design for Two Light System; Includes Daytime Running Lights

STARTING MOTOR {Leece-Neville M130D} 12 Volt; Less Thermal Over-Crank Protection

BACK-UP ALARM: 102dba

SWITCH, AIR HORN, PASSENGER Fire Truck Application; Switch located in instrument panel close to passenger. Driver also to activate horn switch.

HEADLIGHTS Halogen; Composite Aero Design for Two Light System; Includes Daytime Running Lights

STARTING MOTOR {Delco 38MT Type 300} 12 Volt; Less Thermal Over-Crank Protection

INDICATOR-Low coolant level with audible alarm

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

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GRILLE Stationary, Chrome

GRILLE EMBER SCREEN Mounted to Grille to Keep Hot Embers out of Engine Air Intake System

PAINT SCHEMATIC, PT-1 Single Color, **RED**, **Requires sample spray out prior to paint**

Includes

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

PAINT CLASS Single Custom Color.

Engine Block Heater (1250 Watt)

ENGINE, DIESEL {International MaxxForce 9} 50 State, 310 HP, 950 lb-ft Torque @ 1200 RPM, 2200 RPM Governed Speed, # 2 Bell Housing

Includes

- : COLD STARTING EQUIPMENT Intake Manifold Electric Grid Heater with Engine ECM Control
- : CRUISE CONTROL Electronic; Controls Integral to Steering Wheel
- : ENGINE OIL DRAIN PLUG Magnetic
- : ENGINE SHUTDOWN Electric, Key Operated
- : FAN Optimized Position
- : FUEL/WATER SEPARATOR and FUEL FILTER in a Single Assembly; With Waterin-Fuel Sensor; Mounted on Engine
- : GAUGE, AIR CLEANER RESTRICTION Air Cleaner Mounted
- : GOVERNOR Road Speed, Electronic
- : OIL FILTER, ENGINE Spin-On Type
- : WET TYPE CYLINDER SLEEVES

RADIATOR Aluminum; 2-Row, Cross Flow, Over Under System, 1228 SqIn Louvered, With 1167 SqIn Charge Air Cooler. With In-Tank Transmission Cooler

AIR CLEANER Single Element

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

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FEDERAL EMISSIONS 2004 for International MaxxForce 9 & 10 Engines (DT570 & HT570)

ENGINE CONTROL, REMOTE MOUNTED Provision for; Includes Module and Connector for Body Builder

Installation of Remote Engine Speed Control, With SAE J1939 Communication

TRANSMISSION, AUTOMATIC { ALLISON 3000EVS\_P } 4th Generation Controls; Close Ratio, 5-Speed; With Overdrive, Includes Oil Level Sensor, With Provision for PTO, Less Retarder, Max. GVW N/A

Includes

: TRANSMISSION OIL PAN Magnet in Oil Pan

TRANSMISSION SHIFT CONTROL { ALLISON } Push-Button Type; for Allison 3000 & 4000 Series

Transmission

SUSPENSION {Hendrickson RT-403 } Walking Beam Type 52" Axle Spacing 40,000-lb Capacity with Rubber Center Bushings

FUEL TANK Top Draw; D Style, Steel, 19" Deep, 50 U.S. Gal., 190 L Capacity, With Quick Connect Outlet,  
Mounted Right Side, Under Cab

CAB Conventional

Includes

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

: CLEARANCE/MARKER LIGHTS (5) Flush Mounted

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

: FLOOR COVERING Rubber, Black

: GLASS, ALL WINDOWS Tinted

: GRAB HANDLE, CAB INTERIOR (1) "A" Pillar Mounted, Passenger Side

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

: STEP (4) Two Steps Per Door

GAUGE CLUSTER English With English Electronic Speedometer

Includes

: GAUGE CLUSTER (5) Engine Oil Pressure (Electronic), Water Temperature (Electronic), Fuel (Electronic),

Tachometer (Electronic), Voltmeter

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

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

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### DESCRIPTION

SEATBELT WARNING PREWIRE Includes Seat Belt Switches and seat Sensors for all Belted Positions in the Cab and a Harness Routed to the Center of the Dash for the Aftermarket Installation of the Data Recorder and Seatbelt Indicator Systems, for 1 to 3 Seat Belts.

SEAT, DRIVER, NFPA Compliant High Back Air Suspension With Integral Headrest

Includes

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

SEAT, TWO-MAN PASSENGER {Gra-Mag} With Two Integral Headrest, Vinyl, With Fixed Back, Less Under Seat Storage Compartment

Includes

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

GRAB HANDLE (2) Chrome Towel Bar Type With 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 All Heated Heads, Thermostatically Controlled, With Bright Finish Heads and Brackets

CAB MOUNTING HEIGHT EFFECTS Mid Cab in Lieu of Low Cab Mounting Height (Approx. 4") for Increased Cooling System Requirements

SEAT BELT All Red; 1 to 3

CAB SOUND INSULATION Includes Dash Insulator and Engine Cover Insulator  
INSTRUMENT PANEL Center Section, Flat Panel

WINDOW POWER (2) And Power Door Locks, Left and Right Doors

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

Includes

: FRESH AIR FILTER

: HEATER HOSES Premium

: REFRIGERANT Hydrofluorocarbon HFC-134A

Includes

: "A" PILLAR COVER Molded Plastic

: CAB INTERIOR TRIM PANELS Molded Plastic, Full Height; All Exposed Interior

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Sheet Metal is Covered Except for the Following: with a Two-Man Passenger Seat the Back Panel is Only Partially Covered and with a Full Bench Seat the Back Panel

: CONSOLE, OVERHEAD Molded Plastic with Dual Storage Pockets and Retainer Nets and CB Radio Pocket

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

: DOOR TRIM PANELS Molded Plastic; Driver and Passenger Doors

: HEADLINER Printed Cloth

: INSTRUMENT PANEL TRIM Molded Plastic with Black Center Section, Hidden Cup Holder and Ash Tray

(Pull-Out)

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

: SUN VISOR (2) Padded Vinyl with Driver Side Toll Ticket Strap, Integral to Console

CAB REAR SUSPENSION Air Bag Type

WHEELS, Aluminum

Includes

: WHEEL SEALS, FRONT Grease Lubricated, Includes Wheel Bearings

TIRE, REAR (MICHELIN) All Terrain

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## **OEM CHASSIS MODIFICATIONS**

Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

### **TRANSMISSION LOCK-UP EVS-3000**

An electronic lock-up relay system shall be installed between the engine and transmission and the fire pump. The lock-up shall place the transmission into the 1:1 gear automatically for pump operations.

### **FRONT & REAR MUD FLAPS**

There shall be a pair of front and rear mud flaps installed at the rear of the fenders.

### **REAR TOW EYES**

There shall be two (2) tow eyes, one (1) on each side. They shall be attached to the frame rails, located in the rear center, under the tailboard. The truck will also be equipped with a combination pintle and ball hitch, safety chain D rings and 7 pin light connector

### **EXHAUST SYSTEM**

The exhaust system supplied shall be in compliance with the latest EPA Emission standard.

### **ROCKER SWITCH PANEL**

There shall be a TST Tech 10 control head located in the cab. The panel shall be mounted in an aluminum Jotto Desk tower between the driver and officer.

### **MASTER BATTERY SWITCH**

A master battery on/off switch with shall be provided in the cab, near the driver's door.

### **BACK-UP ALARM**

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

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### **FIRE PUMP**

Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

#### **NFPA 1901 COMPLIANT PUMP**

The fire pump and related plumbing on the specified apparatus shall be installed in accordance with applicable NFPA 1901 guidelines at the time the contract was placed.

#### **SIDE PANEL MODULE**

A pump operator's side panel pump module shall be provided. It shall be assembled and mounted independently from both the chassis and the body to properly allow sufficient flexing and prevent component fatigue.

The module shall be constructed using 3" aluminum square tubing with a 3/16<sup>th</sup> inch wall thickness. The welded ends of the tubing shall be chamfered prior to welding and shall be ground smooth prior to finishing. **(NO EXCEPTIONS)**

#### **SIDE PANELS**

The pump compartment module shall have left and right side pump panels constructed of brushed stainless steel sheets. The side pump panels shall be removable. **(NO EXCEPTIONS)**

#### **GAUGE PANEL - STAINLESS STEEL**

The pump operator's upper gauge panel shall be located on the left side of the pump module above the main control panel. It shall be constructed from brushed stainless steel. It shall be vertically hinged and shall have two latches. **(NO EXCEPTIONS)**

#### **ACCESS PANEL - STAINLESS STEEL**

There shall be a hinged upper access panel located above the main pump panel on the right side of the pump module. It shall be constructed from brushed stainless steel. It shall be vertically hinged and shall have two latches. **(NO EXCEPTIONS)**

#### **COLOR CODED LABELS**

A set of color-coded and function described labels shall be provided on the apparatus for the pump operator's controls, gated inlets, discharge outlets, drains, intake gauge, and pressure gauges (as applicable). The labels shall be a high quality plastic material with a durable adhesive on the back.

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

The light shield shall be incorporated into the stainless steel gauge and operator's panel. Each light shall be weather resistant LED. A switch, located on the pump operator's panel shall be provided to activate the lights.

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

The light shield shall be incorporated into the stainless steel gauge and operator's panel. Each light shall be weather resistant LED. A switch, located on the pump operator's panel shall be provided to activate the lights.

### **PUMP COMPARTMENT LIGHTS**

Two (2) incandescent lights shall be provided inside the pump compartment area.

### **RUNNING BOARDS**

Diamondplate running boards shall be installed on each side of the pump compartment module. The running boards shall be constructed of 1/8" fire apparatus bright aluminum treadplate with grip strut. Each shall be a minimum of approximately 11" deep x the width of the side panel module.

The grip strut shall meet recommendations for slip resistant surfaces at the time of proposal. **(NO EXCEPTIONS)**

The running boards shall be attached to a frame mounted outrigger support structure. Each running board to have a 3" downward bend on the front and side faces with a 1" underside return for superior strength.

### **PUMP SYSTEM 500 GPM - PTO**

A Power Takeoff (PTO) Driven Centrifugal Booster Pump rated up to **500 GPM** @ 150 PSI, is to be provided. Pump to be placed in gear from chassis cab. Pump shift to be clearly labeled. PTO and pump gear ratios to be selected, which shall provide good performance in "pump and roll" operations. The pump shall have Nickel Alloy casing. Bronze, double-hubbed impeller, mechanically and hydraulically balanced, shall installed on a splined Stainless Steel shaft.

Impeller shaft to be supported by oil-lubricated ball bearings. Pump gear case shall modern, silentrunning, helically cut gears, fully supported by ball bearings and have two (2) replaceable, Bronze seal rings. Stuffing box packed with plastallic packing, injected into box from external supply cylinder with a single injection screw. Repack with pellets. The pump shall be installed to be removable from the apparatus for overhaul or service. Truck must be capable of pump and roll and maintain proper flow on front turret.

### **PUMP CERTIFICATION**

The fire pump shall be tested by **W.S. Darley & Co.** To meet the flow requirements of the pump installed on the apparatus. A written certification shall be provided with the completed vehicle.

### **4-1/2" LEFT SIDE INLET**

One (1) 4-1/2" suction steamer inlet with male NH threads shall be provided, on the left side pump panel.

The inlet shall have a removable screen. The inlet shall have a polished chrome cap

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### **4-1/2" RIGHT SIDE INLET**

One (1) 4-1/2" suction steamer inlet with male NH threads shall be provided, on the right side pump panel. The inlet shall have a removable screen.

The inlet shall have a polished chrome

### **ELECTRIC PRIMER**

The fire pump priming system shall consist of one (1) 12V positive displacement type rotary vane primer of a fluidless design.

A single, push-pull control shall be located on the pump operator's panel with a "Pull to Prime - Push To Close" label. The primer shall not require a lubrication tank. The priming pump shall be constructed of heat treated aluminum and hard coat anodized.

The pump priming system shall include a light to indicate when the pump priming system has been activated. The light shall be red in color and shall be labeled "WARNING - Primer Engaged".

### **PRESSURE GOVERNOR and MONITORING DISPLAY**

A Fire Research Pump Boss model PBA100-A00 pressure governor and monitoring display kit shall be installed. The system shall include a control module, pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 6 3/4" high by 4 5/8" wide by 1 3/4" deep. Inputs for monitored information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring.

The following continuous displays shall be provided:

- + CHECK ENGINE and STOP ENGINE warning LEDs
- + Engine RPM; shown with four daylight bright LED digits more than 1/2" high
- + Engine OIL PRESSURE; shown on an LED bar graph display in 10 psi increments
- + Engine TEMPERATURE; shown on an LED bar graph display in 10 degree increments
- + BATTERY VOLTAGE; shown on an LED bar graph display in 0.5 volt increments
- + PSI / RPM setting; shown on a dot matrix message display
- + PSI and RPM mode LEDs
- + Throttle Ready Indicator

A dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator.

### **FUNCTION SWITCHES:**

Idle Mode - Preset - Increase - Decrease - Silence.

This system shall utilize information from the chassis engine ECU.

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An audible alarm buzzer shall be included.

### **INDICATOR LIGHT**

A green indicator light labeled "**THROTTLE READY**" shall be included with the pressure governor control located on the pump operator's panel. It shall indicate that the pump is engaged in the proper stationary pumping position, and that the parking brake is set.

### **INTAKE RELIEF VALVE**

One (1) bronze, Elkhart intake relief valve shall be provided and mounted on the suction side of the pump, adjustable from 50-250 psi, on the valve itself. The valve shall be factory preset at approximately 125 psi.

The system does not include an on/off control. **(NO EXCEPTIONS)**

### **MASTER DRAIN**

One (1) rotary style master drain shall be installed on the lower portion of the side control panel. It shall be of brass construction and use a rotary screw mechanism against a rubber sealing surface. Each port shall be isolated. An "open and closed" label with arrows indicating direction shall be installed.

### **PUMP PANEL ID PLATE**

An identification plate, prepared by the fire pump manufacturer, shall be installed on the pump operator control panel to identify the fire pump serial number, model number, and performance.

### **PLUMBING SYSTEM**

The plumbing system shall consist of hard piping, or flexible high pressure hose with stainless steel ends, as deemed necessary for the application. Upon completion, the entire system shall be fully pressure tested.

The plumbing and valve arrangement shall be capable of delivering water to the pump at a minimum flow rate of 500 GPM while pumping at 150 psi pressure.

Each gated intake shall be equipped with a 3/4-inch bleeder valve located in close proximity to the intake.

All intakes shall be provided with suitable closers (valves or caps) capable of withstanding 500 PSI.

When any 3" or larger intake or discharge is gated (except tank to pump valve), the valve shall have a mechanism to allow the valve to fully open or fully close no faster than 3 seconds.

Any 2-1/2" or larger discharge outlet, mounted 42" or higher from ground, which hose is to be connected, and which is not in a hose storage area, shall be supplied with a sweep elbow of at least 30 degrees.

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All 2-1/2" and larger intakes and discharges shall be equipped with drains. All drain valves shall be operational without the operator having to get under the apparatus. All discharges and intakes shall terminate with chrome NST adapters, with chrome caps and chains, unless detailed otherwise in these specifications.

### **2-1/2" SUCTION(S) - LEFT SIDE**

One (1) 2-1/2" brass suction valve(s) shall be installed on the left pump panel with the valve body mounted behind the pump panel. The control handle(s) shall be the quarter turn ball type, of the fixed pivot design, and located along side the suction valve.

The suction(s) shall terminate with a 2-1/2" female NST chrome inlet swivel, a chrome male plug, chain, and a brass inlet strainer.

The valve(s) shall be Darley brand with a polished stainless steel ball.

### **TANK TO PUMP LINE**

One (1) tank to pump line shall be provided for connection between a water tank and the fire pump. The valve shall be a 4" wafer valve. The valve shall be controlled from the pump operator panel using an electric open/closed, two-position toggle switch with a green indicator light for the closed position, and an amber indicator light for open. The toggle switch shall activate an electric over air solenoid, which actuates an air cylinder changing the position of the valve. (No Exceptions)

### **2" TANK FILL**

One (1) 2" pump to tank fill line shall be installed with a 2" inline bronze valve. The valve shall be manually controlled and properly labeled at the pump operator's panel.

### **2-1/2" LEFT SIDE DISCHARGE**

One (1) 2-1/2" discharge outlet with 2-1/2" pipe and valve and chrome NST threads shall be supplied at the left side panel. The valve shall be a quarter turn ball type, self locking, fixed pivot design and shall be operated with a lever control from the operator's panel.

The valve shall be Darley bronze valve with a high polished stainless steel ball.

The valve shall have a chrome 30-degree elbow, with a chrome cap and a stainless steel retaining chain.

A 2-1/2" liquid filled gauge with a stainless steel bezel shall be provided for the discharge. The gauge shall be located on the pump operator's panel near the discharge control.

### **2-1/2" RIGHT SIDE DISCHARGE**

One (1) 2-1/2" discharge outlet with 2-1/2" pipe and valve and chrome NST threads shall be supplied at the right side panel. The valve shall be a quarter turn ball type, self locking, fixed pivot design and shall be operated with a lever control from the operator's panel. **(NO EXCEPTIONS)**

The valve shall be Darley bronze valve with a high polished stainless steel ball.

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The valve shall have a chrome 30 degree elbow, with a chrome cap and a stainless steel retaining chain.

A 2-1/2" liquid filled gauge with a stainless steel bezel shall be provided for the discharge. The gauge shall be located on the pump operator's panel near the discharge control.

### **CROSSLAYS**

**Three (3) 1-3/4"** crosslays shall be installed in the pump module above the pump. The crosslays shall each have capacity for 200 ft. of 1-3/4" double jacket fire hose.

The crosslays shall each be piped with 2" pipe and 2" self-locking valve and terminate with a **2" NPT x 1-1/2" NST** chicksan type swivel up through the center of the crosslay flooring. The swivels shall allow hose out either side of the crosslay. **(NO EXCEPTIONS)**

The outside edges of each side opening shall be trimmed with polished stainless steel. A manual valve control shall be furnished at the pump operator's panel for each.

Two (2) 2-1/2" liquid filled gauges, each with a stainless steel bezel shall be provided, one for each discharge. The gauges shall be located on the pump operator's panel near the respective discharge control.

### **WATER LEVEL GAUGE**

Two (2) Fire Research "*TankVision*" water tank level gauges shall be installed. Each gauge shall have an LED display, which flashes when the tank level reaches 25% of capacity.

A built in calibration system shall allow the bottom tank mounted transducer to be mounted with any tank configuration.

Exterior LED cab tank level indications will be included.

### **GAUGE LOCATIONS**

- + One (1) on the pump operator's panel.
- + One (1) on the rear of the apparatus.
- + 2, one each side of cab

### **TANK SLAVE UNIT**

One (1) mini-slave tank level indicator shall be installed in the cab in an area clearly visible by the driver.

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**WATER TANK**

Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

**WATER TANK**

The water tank shall have a capacity of **2750 and 3000 U.S. Gallons**. Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus.

The rear of the tank shall have a water level indicator. A sight tube or electronic indicator shall be acceptable based on the design approved by the tank manufacturer.

**UPF POLY TANK CONSTRUCTION**

The Poly-Tank shall be constructed of 1/2" thick polypropylene sheet stock. **The rear wall of the tanker shall be a minimum of 1" thick.** This will provide a solid surface for mounting steps, lights, handrails, and other requested options. A tank with a rear wall thickness of less than 1" will be cause for immediate rejection. This material shall be a noncorrosive stress relieved thermoplastic, natural in color, and U.V. stabilized for maximum protection. (No Exceptions)

The tank shall be designed and manufactured with the ability to deliver 100% of the tanks rated capacity from each dump valve while on level ground. Tanks whose total discharge capacity cannot be achieved while on level ground through the side or rear dump valves independent of each other will not be considered.

**TANK**

The "Wetside" **tank** shall be of a specific configuration and shall be 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 top of the booster tank shall be fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removability.

**TANK FINISH**

The tank shall be painted to match the apparatus chassis.

**TANK BAFFLES**

The transverse swash partitions shall be manufactured of 3/8" polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" polypropylene (natural in color) and extend to 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

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water flow. All swash partitions shall interlock with one another and be welded to each other as well as to the walls of the tank.

### **TANK SUMP**

There shall be one (1) sump in the bottom of the water tank. The sump shall be constructed of 1/2" polypropylene and shall be located in the left front quarter of the tank. On all tanks that require a front suction, a 4" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump to pre-vent air from being entrained in the water while pumping.

### **TANK FILL CONNECTION**

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and shall be capable of withstanding sustained fill rates of up to 1,000 GPM.

### **TANK LID**

The tank lid shall be constructed of 1/2" thick polypropylene to incorporate a multi three-piece locking design which allows for individual removal and inspection if necessary. The tank lid shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity. Each one of the lids shall have hold downs consisting of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers and shall assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

### **TANK MOUNTING**

The Poly-Tank shall rest on the body cross members in conjunction with such additional cross members, as required by the tank manufacturer.

The tank shall be isolated from the cross members through the use of hard rubber strips with, a minimum Rockwell Hardness of 60 durometer. Additionally, the tank shall be supported around the entire perimeter and captured both front and rear as well as side to side to prevent the tank from shifting during vehicle operation.

Although the tank shall be designed on a free-floating suspension principle, it shall be required that the tank have adequate hold down restraints to minimize movement during vehicle operation.

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The tank shall be completely removable without disturbing or dismantling the apparatus structure.

### **WATER TANK FILL TOWER**

The tank shall have a combination vent and manual fill tower, marked "Water Fill." The fill tower shall be constructed of 1/2" polypropylene and shall be a minimum dimension of 8" x 8" at the outer perimeter. The tower shall be located in the center of the tank. Fill towers located at the front or rear of the tank shall not be permitted due to the increased chance of spillage during operation which could cause a hazardous environment under certain conditions. The tower shall have a 1/4" thick removable polypropylene screen and a polypropylene hinged-type cover. (No Exceptions)

### **TANK OVERFLOW**

The tank shall be equipped with a minimum of a 10" schedule 40 polypropylene overflow / air vent pipe. The pipe shall be installed in the fill tower and extend through the tank and dump to the rear of the rear axle.

### **REAR DUMP VALVES**

There shall be Three (3) 10" dump valves mounted on the rear portion of the tank as low as possible to achieve efficient dumping.

Placement:

- > One (1) Center rear.
- > One (1) Right rear.
- > One (1) Left rear.

Each valve shall be electrically operated from the following locations.

- + Left rear corner of apparatus.
- + Cab console within easy reach of operator.

### **REAR DIRECT TANK FILLS**

There shall be one (1) external 2.5" direct tank fill port furnished on the rear of the apparatus, (1) each side. The tank fill shall have 2.5" Akron Brass valve with built-in 30 degree elbow and manual swing type control handle located on the valve. A chrome plug and chain shall be supplied and installed on the valve.

### **5" INTAKE**

A 5" Piston intake valve shall be installed on the rear of the apparatus. The valve shall have a 5" Storz fitting and blind cap.

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### **BODY SUB-STRUCTURE**

Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

#### **BODY SUB-STRUCTURE**

Body and compartment sub structure will be an all welded steel structure, and bolted to chassis frame. Ultimate strength will be accomplished with 1-1/2" x 3" x 3/16" structural channel members extended across chassis frame and longitudinal supports.

In addition, there will be 1-1/2" x 3" x 3/16" structural channel connecting the front and rear sub structure transverse members for additional strength and to form a full perimeter base for supporting the booster tank. Hangers and brackets will be reinforced at all corners with gussets to prevent potential sag and warp over an extended period of fire service operations.

The sub-structure will be coated with either Linex, Rhino Liner, or a polyurethane type material. Substructures that are just primed and painted will not be permitted. (No Exceptions)

The tank frame and compartment sub-assembly will be supported by using two 4" X 8" structural steel longitudinal support members.

There will be a minimum of two (2) 3" X 3" structural steel angle affixed to the sub-assembly to for the compartment downriggers. Each compartment will be supported 3" X 3" steel angle with corner gussets to form a triangular support structure for strength and longevity.

A minimum of twelve (12) 3/4" Grade 8 bolts will attach the compartment sub-assembly to the vehicle chassis.

The tank cradle, compartment sub-assembly will be continuously welded to form an unprecedented body support system.

Body sub-assemblies that are affixed to the apparatus utilizing "U" bolts will not be permitted. (No Exceptions) Tank support assemblies and/or cradles that are made of a solid sheet of steel will not be considered due to the inability to fully shed moisture. This design will allow moisture to accumulate which will lead to corrosion and failure due to the lack of air space and ventilation. (NO EXCEPTIONS)

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### **BODY CONSTRUCTION**

Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

#### **BODY CONSTRUCTION**

The body compartments shall be fabricated entirely of 1/8" aluminum.

Each compartment shall be 100% welded on all exterior seams with MIG spot welds on the rear and interior seams for maximum strength. All major structural mounting bolts shall be grade five type, with locking style nuts. All 1/4" or smaller mounting bolts, nuts and trim screws used in body construction shall be of stainless steel construction for rust prevention and a lasting appearance while providing maximum strength.

All fasteners shall be removed easily with standard tools. Wherever possible, all fasteners shall have locking style nuts or shall be threaded into panel and locked by an acorn nut, to eliminate loosening fasteners. All screws that do not have locking nuts shall have threads coated with lock-tite.

Acorn nuts shall be used throughout the body to prevent the possibility of snags and injuries, including fasteners, which protrude into compartments and hose bed.

#### **SWEEP-OUT CONSTRUCTION**

All side body compartments shall have sweep out type floors.

All compartments shall be made to the largest practical dimensions to provide maximum storage capacity for fire department equipment. All dimensions are plus/minus 2".

All compartments shall be vented with an aluminum cover to shield water from entering the compartment at the vent area.

#### **DOUBLE PAN DOOR CONSTRUCTION**

Both side rear compartments shall have double-pan aluminum compartment doors constructed with a full inner pan for added strength and durability. The outer pan shall be fabricated from 3/16" (.187) aluminum diamond plate for a superior compartment seal. The inner pan of the door shall be fabricated from 1/8" (.125) mill finish aluminum with a 2" flange. Each door shall be fastened to the compartment using a stainless steel piano type hinge with a full-length 1/4" stainless steel pin. Neoprene automotive type doors seals shall be used on each door. Polished stainless "D"-ring door latches with a two-stage safety catch shall be installed on each door. A spring type door holder shall also be provided on each vertically hinged door.

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### **REAR FENDERS**

Two (2) 3/16" aluminum treadplate fender assemblies shall be included on each side of the vehicle over the rear axle. Reinforcements shall be provided at the rear and center areas to reduce movement during truck operation.

Black rubber fenderettes shall be provided and installed around each wheel well.

### **RUNNING BOARDS**

Running boards shall be fabricated of 3/16" polished aluminum diamondette, supported by the structural steel sub-frame. The running boards when apparatus is fully loaded shall have a maximum ground clearance of 24" when sitting on a level surface. They shall be flanged down to provide added strength and rigidity and to prevent cutting of hands while washing the apparatus. An aluminum "Grip-Strut" insert shall be provided and installed in the side running boards for slip protection and water run off.

### **REAR TAILBOARD**

Rear step shall be constructed of 3/16" polished aluminum diamondette and supported by the structural steel sub-frame. The rear step when apparatus is fully loaded shall have a maximum ground clearance of 24" when sitting on a level surface. The step shall be flanged down to provide added strength and rigidity and to prevent cutting of hands while washing the apparatus. Rear step shall be spaced away from body a minimum of 1/4". An aluminum "Grip-Strut" insert shall be provided and installed in the tailboard for slip protection and water run off.

The rear step shall be dimensions will be determined based on tow hitch and run the entire width of the apparatus.

### **FOLDING TANK STORAGE**

A "EZ Load" folding tank rack shall be provided over the right side compartments. The rack shall be fabricated on top of the right side compartments. It shall be large enough to transport a **3000-gallon** folding tank.

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## **COMPARTMENTATION**

Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

### **COMPARTMENTATION:**

**The following compartments shall be furnished.**

#### **L1: Street Side, forward of axle**

Size: 53.5" wide x 34" high x 25" deep

Type door: Two (2) Vertically Hinged Double Pan Compartment Doors with **two (2) Nader Pins**, Hansen style door hold open devices, D-Ring Latches with locks and diamondplate interior door panels with rivets for easy access to latching mechanism.

#### **R1: Curb Side, forward of axle**

Size: 53.5" wide x 34" high x 25" deep

Type door: Two (2) Vertically Hinged Double Pan Compartment Doors with **two (2) Nader Pins**, Hansen style door hold open devices, D-Ring Latches with locks and diamondplate interior door panels with rivets for easy access to latching mechanism.

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### **ELECTRIC STANDARDS**

Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

#### **ELECTRICAL STANDARDS**

All electrical equipment shall meet SAE standards. All lighting and reflectors shall meet Federal Motor Vehicle Standards.

The apparatus wiring shall be color and function coded. (No Exceptions)

The optical warning system on the fire apparatus shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right of way. The other mode shall signal that the apparatus is stopped and is blocking the right of way. The parking brake switch shall determine, through the use of switching, which mode the emergency lighting is in.

The optical warning devices shall be constructed or arranged to avoid the projection of light either directly or through mirrors into any driving or crew compartments.

Illumination shall be provided for controls switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus and the equipment provided on it. Where external illumination is provided, it shall be a minimum of 5 foot-candles on the face of the device. Where external illumination is provided, it shall be a minimum of 4 foot lamberts.

Hydraulic lines, air system tubing, control cables, and electrical lines shall be clipped to the frame or body structure of the apparatus and shall be furnished with protective heat looms and/or grommets at each point where they pass through body panels or structural members.

Where any through-the-frame connector is provided, any such connector and wiring shall also be protected from shear or tear. Wiring shall be provided with properly rated low voltage over current automatic resetting protective devices. (The headlight circuit breaker shall be of the automatic reset frier type).

Such devices shall be readily accessible and protected against excessive heat, damage and water spray. Switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. Electromagnetic interference suppression shall be in accordance with SAE J551, performance levels and methods of measurement of electromagnetic radiation from vehicles and devices (30-

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1000 MHZ).

All relays and circuit breakers shall be "plug in" type for easy replacement. All components shall be protected against corrosion, heat, vibration and moisture. The relay

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panel shall be installed in the cab on the floor, between the seats and have an easily removable, aluminum cover. Relay panels mounted in compartments shall not be permitted due to the increased risk of damage from moisture. (No Exceptions)

### **CAB CENTER CONSOLE**

A Jotto Desk console tower shall be installed between the driver and officer seats. The tower shall house the following components.

- Battery Indicator
- Low Voltage Indicator
- Door Ajar Indicator
- Tech 10 Switch Panel
- One (1) Blank panel for customer installed radio components

### **COMPONENT SWITCHING**

Component switching shall be accomplished through a Transportation Safety Technology Tech 10 system. The system shall feature 10 Circuit breaker protected relay outputs for each of the 30 Amp automotive style replaceable relays. The relay control module shall be mounted in the cab to reduce the likelihood of moisture related damage. Relay panels mounted in body compartments will not be acceptable. (No Exceptions)

### **LOAD MANAGEMENT SYSTEM**

A Load Manager shall be provided and installed on the vehicle. The Load Manager is designed to meet and exceed all the requirements of NFPA 1901. The system shall sequence a total of eight (8) loads.

Load shedding is accomplished in two zones; one (1) zone for lights that may be shed when on the road and the other for lights that may be shed at the scene. Selection of shedding modes is through the parking brake switch or the neutral safety switch.

A high voltage detector shall be provided to detect when the sensed voltage exceeds 15 volts. High voltage, low voltage and load shedding set points are individually field adjustable. Load shedding priority is determined by the wiring connections to the Load Manager.

### **LOW-VOLTAGE SYSTEM (LVS)**

A Low Voltage Alarm system shall be provided and installed on the vehicle. It is designed to meet and exceed all the requirements of NFPA 1901.

### **DOT LIGHTING**

Two (2) amber and two (2) red side body running lights shall be provided and mounted, one (1) amber and one (1) red on each side approximately midway between the front and

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rear axle. There shall be one (1) amber turn signal light with protective covers furnished and mounted in front of the axle since it is 32.5” long. There shall be five (5) lights located on the rear of the vehicle. Three (3) of the lights shall be in the tailboard area for use as identification lamps. Two (2) lights shall be provided on top stanchions, located as high and wide as possible, one (1) each side, for use as clearance lamps. All required reflectors shall be bolted onto body.

### **TAIL LIGHTS**

The two (2) LED tail/turn/brake lights shall be supplied. The two (2) back-up lights shall be clear. There shall be one (1) set of two mounted vertically each side on rear face of body.

### **COMPARTMENT LIGHTING**

One (1) LED strip light shall be provided in each enclosed compartment, including any and all special compartments provided with a minimum of 4 cubic feet. (No Exceptions)

### **DOOR OPEN HAZARD LIGHT**

There shall be a flashing red light located on the cab dash in clear view of the driver. This light shall be illuminated automatically whenever any passenger or equipment compartment door is open. The light shall be marked “Do Not Move Apparatus When Light Is On”.

### **LICENSE PLATE LIGHT**

A license plate bracket with light shall be provided and installed on the left hand rear of the body. It shall be wired to come on with the headlights.

### **UNDERBODY/CAB GROUND LIGHTS**

Four (4) Truck-Lite 4” clear ground illumination lights, with outward facing angle brackets shall be provided and installed. Two (2) shall be located under the cab doors, and two (2) shall be located to light the rear tailboard area. The lights shall activate with the parking brake.

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**EMERGENCY LIGHTING**

Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

NFPA-1901 Emergency lighting shall consist of:

**CAB UPPER ZONE WARNING LIGHTS**

One (1) 58” Whelan Red and white all LED light bar and shall be provided and installed on the cab roof.

**CAB LOWER ZONE WARNING LIGHTS**

LED Whelan warning red light heads shall be installed as follows:

- > Two (2) in chassis grille (one each side)
- > One (1) left front fender
- > One (1) right rear fender

**APPARATUS BODY WARNING LIGHTS**

Ten (10) LED **red** lights shall be provided and installed as follows:

- > Four (4) rear facing Red
  - Two Upper Zone
  - Two Lower Zone
- > Two (2) in the upper portion of the body. Left Front & Left Rear
- > Two (2) in the upper portion of the body. Right Front & Right Rear
- > Two (2) in the lower zone wheel well area.

**TANKER UPPER REAR WARNING**

Two (2) Strobes or LED’s shall be provided and installed on the Upper Rear stanctions, (1) Red & (1) Red.

**HALOGEN SCENE LIGHTING**

Six (6) Code Three 41Z26K series clear halogen scene lights shall be installed as follows:

- > Two (2) rear facing upper zone. (One each side)
- > Two (2) in the upper portion of the body. Left Front & Left Rear
- > Two (2) in the upper portion of the body. Right Front & Right Rear

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### **SIREN**

One (1) Whelan 100 watt siren shall be furnished and installed in the warning light switch tower between the driver & officer. The hard-wired noise-canceling microphone shall be installed on the dash within easy reach of the driver or officer. It shall have a two (2) year standard warranty from the manufacturer.

### **SIREN SPEAKER**

There shall be a 100-watt siren speaker furnished and installed **in** the front bumper. No surface mounted speakers shall be permitted. (No Exceptions)

### **REFLECTIVE STRIPING**

One 2" gold over One (1) 6" White Scotchlite stripe on each side, conforming to Federal Specification for Reflectivity, shall be provided down both sides of the cab and body. Scotchlite Brand Only (No Exceptions) Striping will match Department fleet.

### **TOUCH-UP PAINT**

A container of touch-up paint will be provided to match the cab color.

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### **OPTIONS INCLUDED**

Comply\_\_\_ Equivalent\_\_\_ Does Not Comply\_\_\_

#### **KUSSMAUL PUMP PLUS**

A Kussmaul Pump Plus system with auto-eject plug shall be installed on the apparatus. The unit will supply a conditioning charge to the chassis batteries. It will also keep the air pressure at operating pressure to reduce the chance of delay. Air pump will have separate switch.

#### **HOSEBED RESTRAINTS**

All hose storage area shall be equipped with a positive means to prevent unintentional deployment of the hose from the top, sides, front, and rear of the hose storage area while the apparatus is underway during normal operations.

Aluminum diamond plate covers with weighted vinyl flaps will be finished.

#### **CAB BRUSH & GRILL GUARD SYSTEM**

There shall be a brush and grill guard system fabricated and installed on the apparatus. The guard assembly shall be configured to provide protection from brush and limbs to the chassis cab and grill. The guard system shall be fabricated from 2" to 3" tubular aluminum unpainted and shall attach to the chassis frame rails for strength and durability. The system shall not interfere with the raising of the hood or servicing of the engine and driveline components. While the system will provide limited protection to the occupants it is not designed to protect the occupants in the event of a roll-over. No roll over or crash protective rating shall be expressed or implied.

#### **FRONT BUMPER**

The bumper shall be extended approximately 21" ahead of the cab. The extension shall be fabricated from structural steel. The extension shall be designed to allow for the hood to open for service. A retainer shall prevent the hood from fully opening onto the apron which could lead to damage.

#### **APRON WITH HOSEWELL**

A 3/16" bright aluminum tread plate apron with hosewell and lid shall be built into the center of the front bumper extension. The hosewell shall be installed between the bumper

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and the face of the cab. The hosewell shall be as large as possible depending on the bumper extension and the accessories mounted in the bumper.

## **1.5" FRONT BUMPER DISCHARGE**

There shall be One (1) 1.5" discharge plumbed to the hosewell in the extended front bumper. The discharge will be plumbed with 2.0" piping and high pressure hose. The discharge will be controlled by a 2.0" ball valve. A 1.5"FIPT x 1.5" MNST chrome plated Chicksan swivel (shall/will) be provided through the front bumper extension to allow the attached hose to be used from either side of the vehicle. The valve will be controlled from the left hand pump operator's panel with a Class 1 locking push/pull chrome "T" handle. A 2.5" gauge will be supplied within 6" above the control for pressure reading of the front bumper discharge. A 3/4" automatic drain valve shall be provided in the elbow of the discharge piping.

## **SIDEWINDER NOZZLE**

An Elkhart Model 8494-0 1 Sidewinder Wildland Monitor shall be installed on the front bumper. **(Activate with pump and roll)**

- Constructed of durable, lightweight Elk-O-Lite
- Flow Efficient 2.0" vaned waterway
- nozzle size for flows of 15 to 40 GPM
- Stainless steel worm gears fully enclosed for protection from the elements
- Vertical travel 135°, (90° above to 45° below horizontal)
- Electric gear motors totally enclosed and sealed
- Manual override in the event of power failure
- 2.0" NPT female inlet
- 1.5" NHT male outlet
- Adjustable Gog Nozzle
- Joy Stick Controller
- Remote Pump Start
- Valve Control
- Cam lock removable system
- Cab pressure discharge gauge

## **BOOSTER REEL**

One (1) 200' Electric Rewind Aluminum Booster reel shall be installed on the rear of the apparatus. The reel shall be mounted beneath the center rear dump valve and shall be enclosed in a treadbrite aluminum housing. A set of capture rollers shall be installed to aid in the deployment of the hose. A single momentary switch shall be mounted in a location to be determined during the pre-construction information exchange. The reel shall come equipped with Two (2) 100' sections of 1" reeltex hose.

## **FOAM SYSTEM**

A Foam-Pro 1601 Foam System shall be included. Foam system will operate from cab control

The apparatus shall be equipped with an electronic, fully automatic, variable speed, direct injection, discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrate. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures.

System must be capable of delivering accuracy to within 3% of calibrated settings over the advertised operation range when installed according to factory standards. The system shall be equipped with a control module suitable for installation on the pump panel.

Incorporated within the motor driver shall be a microprocessor that receives input from the system flowmeter, while also monitoring foam concentrate pump output, comparing values to ensure that the operator preset proportional amount of foam concentrate is injected into the discharge side of the fire pump. A paddlewheel-type flowmeter shall be installed in the discharge system specified to be “foam capable.”

The control module shall enable the pump operator to:

Activate the foam proportioning system

Select proportioning rates from 0.1% to 1.0%

See a “low concentrate” warning light flash when the foam tank runs low and in two minutes, if foam concentrate is not added to the tank, shut the foam concentrate pump down.

A 12 or 24-volt electric motor driven positive displacement plunger pump shall be provided.

The pump capacity shall be 1.7 gpm (6.4 L/min) at 200 psi (13.8 BAR) with a maximum operating pressure up to 400 psi (27.6 BAR). The system will draw a maximum of 30 amps @ 12 VDC or 15 amps @ 24 VDC. The motor shall be controlled by the microprocessor (mounted to the base of the pump). It shall receive signals from the control module and power the 1/3 hp (.25 Kw) electric motor in a variable speed duty cycle to ensure that the correct proportion of concentrate is injected into the water stream. A full flow check valve shall be provided in the discharge piping to prevent foam contamination of fire pump and water tank. A 5 psi (.35 BAR) opening pressure check valve shall be provided in concentrate line.

Components of the complete proportioning system as described above shall include:

- > Operator control module Paddlewheel flowmeter Pump and electric motor/motor driver
- > Wiring harnesses Low-level tank switch
- > Foam tank
- > Foam injection check valve
- > Main waterway check valve

## **FOAM CELL**

A 60 gallon foam cell shall be integrated into the poly water tank. The foam tank shall not take away from the rated water carrying capacity of the tank. The tank shall be

equipped with the appropriate vents according to NFPA requirements.

### **SPRAY HEADS**

A left and right rear spray head for use with dust control and fire suppression will be included. Controls will be placed in the cab.

Drawing: Drawing will be submitted with all bids

