

BULLDOG FIRE APPARATUS DEMO UNIT

INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to cover the furnishing and delivery of a complete fire apparatus. These detailed specifications cover the requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor. The manufacturer shall provide loose equipment only when specified by the customer. Otherwise, in accordance with the current edition of NFPA 1901 standards, the proposal shall specify whether the fire department or apparatus dealership shall provide required loose equipment.

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 10 years. Further, bidder shall maintain dedicated service facilities for the repair and service of products. Evidence of such a facility shall be included in bidder proposal.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built.

The bidder shall also show that the company is in position to render prompt service and to furnish replacement parts.

Each bid shall be accompanied by a detailed set of Contractor's Specifications consisting of a detailed description of the apparatus and equipment proposed, and to which the apparatus furnished under contract shall conform. These specifications shall indicate size, type, model and make of all component parts and equipment.

GENERAL DESIGN AND CONSTRUCTION

The prime vehicle manufacturer shall be responsible for the overall design so that the cab, chassis, pump module, and body are all integrated and function together as a complete fire apparatus.

The apparatus shall be designed with due consideration to distribution of load between the front and rear axles. Weight balance and distribution shall be in accordance with the recommendations of the National Fire Protection Association.

Special consideration shall be given to the following points: Accessibility of the various units, which require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions.

Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any component part for service or repair.

The bidder shall make accurate statements as to the apparatus weight and dimensions.

BULLDOG FIRE APPARATUS DEMO UNIT

COMMERCIAL GENERAL LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of commercial general liability insurance:

General Aggregate Waived
Products/Completed Operations Aggregate \$2,000,000
Personal and Advertising Injury \$1,000,000
Each Occurrence \$1,000,000

Coverage shall be written on a Commercial General Liability form. The policy shall be written on an occurrence form and shall include Contractual Liability coverage. The policy shall include owner as an additional insured as their interest may appear.

The required limits can be provided by one or more policies provided all other insurance requirements are met.

COMMERCIAL AUTOMOBILE INSURANCE

The successful bidder shall, during the performance of the contract, keep in force at least the following minimum limits of commercial automobile insurance:

Each Accident: \$500,000

Coverage shall be written on a Commercial Automobile form.

UMBRELLA/EXCESS LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three (3) years following acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

Aggregate: \$1,000,000
Each Occurrence: \$1,000,000

The policy shall be written on an occurrence basis and at a minimum provide the same coverage's as Bidder's General Liability, Automobile Liability and Employer's Liability policies. Owner shall be included as an additional insured on the General Liability and Automobile Liability policies as their interest may appear. The required limits can be provided by one or more policies provided all other insurance requirements are met.

Bidder agrees to furnish owner with a current Certificate of Insurance with the coverage listed above along with its bid. The certificate shall be made out to the purchaser and be an original, no photocopies shall be accepted. The Certificate of Insurance shall provide that owner be given 30 days advance notice of cancellation, nonrenewable or material change in coverage.

BULLDOG FIRE APPARATUS DEMO UNIT

WARRANTY

The following warranty shall be supplied with the proposal and be printed on company forms.

The manufacturer shall warranty each piece of new fire or rescue apparatus to be free from defects in materials or workmanship under normal use and service. The manufacturer's obligation under this warranty is limited to repairing or replacing, as the company may elect, any parts thereof which are returned to them, with transportation costs prepaid and as to which examination is disclose to the company's satisfaction to have been defective.

Please refer to the attached warranty documents for more details.

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be conducted with the apparatus fully loaded and a continuous run of ten (10) miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating.

The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus.

Vehicle shall adhere to the following parameters:

- A) The apparatus, when fully equipped and loaded, shall have not less than 25 percent nor more than 50 percent of the weight on the front axle, and not less than 50 percent nor more than 75 percent on the rear axle.
- B) The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.
- C) The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level concrete highway. If equipped with an air brake system, it shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.
- D) The apparatus, fully loaded, shall be capable of obtaining a speed of 50 mph on a level concrete highway with the engine not exceeding its governed rpm (full load).

FAILURE TO MEET TEST

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus.

BULLDOG FIRE APPARATUS DEMO UNIT

FAILURE TO MEET TEST (Continued)

Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

NFPA 2016 STANDARDS

This apparatus specification includes a commercial chassis that has not been certified to meet the requirements of NFPA 1901 by the chassis manufacturer. Although this chassis may comply with certain aspects of the standard, has not received certification from this chassis manufacturer that all criteria have been met. The body as built by the manufacturer must comply with the NFPA standards effective January of 2016.

Certification of slip resistance of all stepping, standing and walking surfaces must be supplied with delivery of the apparatus.

All horizontal surfaces designated as a standing or walking surface that are greater than 48.00" above the ground must be defined by a 1.00" wide line along its outside perimeter. Perimeter markings and designated access paths to destination points shall be identified on the customer approval print and are shown as approximate.

Actual location(s) shall be determined based on materials used and actual conditions at final build. Access paths may pass through hose storage areas and opening or removal of covers, or restraints may be required. Access paths may require the operation of devices and equipment such as the aerial device or ladder rack. A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating.

The manufacturer shall have programs in place for training, proficiency testing and performance for any staff involved with certifications.

An official of the company shall designate, in writing, who is qualified to witness and certify test results.

NFPA COMPLIANCY

Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in the current edition at time of contract execution. Fire Department's specifications that differ from NFPA specifications shall be indicated in the proposal as "non-NFPA."

PRE-CONSTRUCTION CONFERENCE

The Dealership and/or the Manufacturer shall have a pre-construction conference prior to start of production. The purpose of this meeting is to finalize all construction details.

The conference shall be held at the Ward Apparatus Facility in Horseheads, New York. The dealer representative shall coordinate this meeting at a pre-determined location and time.

BULLDOG FIRE APPARATUS DEMO UNIT

PRE-CONSTRUCTION CONFERENCE (Continued)

The Fire Department shall be responsible for the travel and hotel accommodations for their attending personnel.

FINAL INSPECTION MEETING

The Dealership and/or the Manufacturer shall have a final inspection meeting with members of the Fire department at the manufacturer's location upon completion of the apparatus and prior to delivery. The purpose of this meeting is to inspect and approve all construction details.

The Fire Department shall be responsible for the travel and hotel accommodations for their attending personnel.

APPROVAL DRAWING

A drawing of the proposed apparatus shall be provided for approval before construction begins.

The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

A "revised" approval drawing of the apparatus shall be prepared and submitted by the manufacturer to the purchaser showing any changes made to the approval drawing.

APPARATUS COMPLETION

Construction of the apparatus shall be completed within 300 days after the receipt of the purchase order or approved signed contract. This date is highly dependent upon receipt of the chassis 90 days prior to the 300 day time frame.

PUMP TEST

The rated water pump shall be tested, approved, and certified by an ISO certified independent third-party testing agency at the manufacturer's expense. The test results, along with the pump manufacturer's certification of hydrostatic test, the engine manufacturer's certified brake horsepower curve, and the manufacturer's record of pump construction details shall be forwarded to the Fire Department.

BULLDOG FIRE APPARATUS DEMO UNIT

FORD F550 CHASSIS SPECIFICATIONS

The chassis shall be a 2021 Ford, Model F-550 Super Duty, 4x4 chassis supplied with the following equipment:

WHEELBASE

The wheelbase of the vehicle shall be no greater than 203", with a cab to axle distance of 84.00".

GVW RATING

The chassis shall include the Payload Plus Upgrade Package so that the gross vehicle weight rating is 19,500 pounds.

FRAME

The frame rails shall include the upgrade required to meet the enhanced GVWR.

FRONT AXLE

The front axle shall be a driving type with a 7,500 lb. capacity rating at the ground.

A manually shifted, two (2) speed transfer case shall be provided to engage the front axle.

FRONT SUSPENSION

A "Heavy Service Suspension" shall be provided on the front axle. The rating shall be as described below, but it shall provide enhanced support over the standard suspension:

- Front Mono-beam non-independent suspension with coil spring and anti-roll bar
- Capacity at Ground: 7,000 lb.
- Front Anti-Roll Bar

Shock absorbers shall be provided on the front axle.

ELECTRIC SHIFT TRANSFER CASE AND AUTO/LOCKING WHEEL HUBS

The front axle shall be provided with manually selectable full locking or automatic locking wheel hubs.

There shall be an electric control for the transfer case to engage the front axle and shift between high and low all-wheel drive operation.

TIRES, FRONT

The front tires shall be 225/70R19.50 with black side walls and an (AT) all-terrain "traction" tread.

BULLDOG FIRE APPARATUS DEMO UNIT

WHEELS, FRONT

Wheels for the front axle shall be aluminum.

REAR AXLE

The single reduction limited slip rear axle shall have a ground rating capacity of 14,706 lb.

REAR BRAKES

The rear brakes shall be hydraulic disc type.

PARKING BRAKE

The parking brake shall be located on the rear axle service brake.

REAR AXLE RATIO

Limited Slip / 4.88.

REAR SUSPENSION

The rear suspension shall be a leaf spring type, with a capacity at ground level of 15,000 lb.

The rear stabilizer bar shall be included.

TIRES, REAR

The rear tires shall be 225/70R19.50G with black side walls and an (AT) all-terrain "traction" tread.

WHEELS, REAR

The in rear wheels shall be painted steel. The outer wheels shall be aluminum.

ANTI-LOCK BRAKE SYSTEM (ABS), ROLL STABILITY CONTROL (RSC)

The vehicle shall be equipped with an anti-lock braking and roll stability control systems.

ABS:

- Sensors monitor wheel rotation speed, checking for the onset of wheel lockup.
- If the onset of lockup is detected, the system automatically compensates for this condition and prevents wheel lockup by automatically "pumping" the brakes several times per second, even when the brakes are firmly applied.

BULLDOG FIRE APPARATUS DEMO UNIT

ANTI-LOCK BRAKE SYSTEM (ABS), ROLL STABILITY CONTROL (RSC) (Continued)

- Improves vehicle steering control in severe braking maneuvers, under variety of weather conditions.

RSC:

- An additional vehicle control software module.
- Detects the roll angle of the vehicle on the horizontal axis.
- Monitor's vehicle body roll angle at least 100 times per second.
- Automatically reacts to help the driver keep the vehicle upright and all tires on the ground.

FRONT BRAKES

The front brakes shall be hydraulic disc type.

ENGINE

Model: Power Stroke 6.7 Turbocharged Diesel, CGI (compacted graphite iron) block and aluminum heads

- Number of Cylinders: Eight (8), "V" configuration
- Bore and Stroke: 3.90 x 4.25 in
- Displacement: 6.7 liters (406 cubic inches)
- Compression Ratio: 15.8:1
- Rated Brake Horsepower: 330 at 2600 rpm
- Peak Torque: 825 ft-lb at 2000 rpm
- Turbocharger: VGT (Variable Geometry Turbine) DualBoost
- Combustion System: High Pressure Bosch Fuel Injection System

ENGINE ACCESSORIES

- Air Cleaner: Dry type
- Governor: Limiting speed type
- Lube Oil Cooler
- Lube Oil Filter: Full flow
- Fuel Filter: Single fuel filter/water separator, heated.
- Starting Motor: 12-volt
- Oil Fill and Level Gauge

BULLDOG FIRE APPARATUS DEMO UNIT

RADIATOR

- Pressurized System, Tube and Fin
- Anti-Freeze Protection to -20 degrees Fahrenheit.

ENGINE EXHAUST BRAKE

A Smart exhaust brake shall be provided. The control button shall be located on the instrument panel within easy reach of the driver.

AIR RESTRICTION INDICATOR

To meet the NFPA requirement, the chassis shall have an air restriction indicator in the cab, visible to the driver.

EXHAUST SYSTEM

The exhaust system shall include a diesel particulate filter (DPF), a diesel oxidation catalyst and a selective catalytic reduction (SCR) to meet current EPA standards. The exhaust shall terminate with a horizontal tailpipe and diffuser on the right side behind the rear wheels.

The combustion system is the heart of the 6.7L Power Stroke diesel engine and reflects how Ford engineers achieved a balance of power, fuel efficiency and reduced emissions. To help reduce NOx levels, the Power Stroke burns cleaner in large part because of the Exhaust Gas Recirculation (EGR) system.

In addition, there is a three-step after-treatment system utilizing a diesel oxidation catalyst (DOC), selective catalytic reduction (SCR) using diesel exhaust fluid (DEF) and a diesel particulate filter (DPF) as the key components.

COOLANT LINES

Premium rubber hose shall be used for all engine coolant lines installed by the chassis manufacturer.

Hose clamps shall be of a design commonly called constant torque type to prevent coolant leakage. They shall react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose.

FUEL TANK

The fuel tank provided shall be 40-gallon capacity and mounted behind the rear axle by the chassis manufacturer. It shall comply with all DOT regulations. It shall be designed and installed so that it does not interfere with the mounting of the pump, plumbing or other components.

DIESEL EXHAUST FLUID TANK

A diesel exhaust fluid (DEF) tank shall be provided for the emissions system.

BULLDOG FIRE APPARATUS DEMO UNIT

TRANSMISSION

A ten (10)-speed automatic overdrive transmission shall be provided.

TRANSMISSION COOLER

A transmission oil cooler shall be provided in a tank of the radiator.

TRANSMISSION PTO PROVISION

The chassis transmission shall include the provision for a PTO.

DRIVELINE

The driveline shall be a heavy-duty metal tube type. A splined slip joint shall be provided in each driveshaft.

STEERING

The steering wheel shall be black vinyl with 3-button message center control. The steering wheel is 15.00" in diameter and includes tilt and telescoping adjustment.

Cruise control shall be steering wheel mounted.

The steering gear ratio shall be 20.30:1.00. The steering shall consist of a hydraulically driven steering system.

BUMPER

A full-width, aerodynamic, chrome plated steel bumper shall be attached to the front of the chassis frame.

TOWING PROVISIONS

Two (2) painted, steel tow eyes or hooks shall be provided.

CAB

Type: Conventional, engine forward, four (4) door crew cab

Construction: Aluminum

Accessories:

- Tinted glass in all windows
- Dual sun visors
- Electric windshield washer

BULLDOG FIRE APPARATUS DEMO UNIT

CAB (Continued)

- Two (2) speed electric windshield wipers with intermittent control
- Dome light
- Fresh air heater and defroster
- Dual electric horns
- Driver and passenger air bags

XL TRIM PACKAGE

The chassis shall be equipped with the Ford XL trim package.

CAB GRILLE

The cab grille shall be a chrome plated high impact plastic.

MIRRORS

Manual-telescoping
Manual-folding trailer tow
Power/heated glass with heated convex spotter mirrors
Turn Indicators

AIR CONDITIONING

An air conditioner shall be provided that is integral with heater and defroster system.

SEATING

Seating inside the cab shall consist of a 40-20-40 split bench seat. These seats shall be upholstered in vinyl or similar material.

REAR SEATING

A Vinyl fold-forward rear bench seat shall be provided by the chassis manufacturer.

SEATING - NFPA

NFPA 1901, 2016 edition, section 4.11 requires all apparatus have a vehicle data recorder, and that the data recorded includes "seat occupied" and "seat belt status".

This seat does not provide the necessary sensors to accomplish the requirements of section 4.11. Per fire department specification and request, this apparatus shall be non-compliant to NFPA 1901 standards effective at time of contract execution.

BULLDOG FIRE APPARATUS DEMO UNIT

SEAT BELT WEB LENGTH

NFPA 1901, 2016 edition, Section 14.1.3.1 and 14.1.3.2 requires effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60.00", and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110.00".

Per Fire Department specification of a commercial chassis, this apparatus may not have seat belts of the required length. These belts may not provide sufficient length for large firefighters in bunker gear. This apparatus shall be non-compliant to NFPA 1901 standards effective at time of contract execution.

SEAT BELTS

NFPA 1901, 2016 edition, section 14.1.3.3 requires the seat belt webbing to be bright red or bright orange in color, and the buckle portion of the seat belt shall be mounted on a rigid or semi-rigid stalk such that the buckle remains positioned in an accessible location.

The seat belt color is not available in red or orange from the commercial chassis manufacturer. Per Fire Department specification of a commercial chassis, the seat belt color shall be noncompliant. This apparatus shall be non-compliant to NFPA 1901 standards effective at time of contract execution.

CAB INSTRUMENTS

Instrumentation display includes the following:

- Engine Temperature Gauge
- Engine Oil Pressure Indicator
- Transmission Fluid Temperature Gauge
- Speedometer with Odometer
- Engine Tachometer
- Engine Hour meter
- Fuel Level Gauge
- Turbo/supercharger Boost Gauge
- Systems Monitor
- Trip Odometer

Warning Indicators Include:

Oil Pressure

- Battery
- Engine Temperature
- Lights On
- Service Interval
- Brake System Indicator
- Key

BULLDOG FIRE APPARATUS DEMO UNIT

CAB INSTRUMENTS (Continued)

- Low Fuel
- Door Ajar

WIPER CONTROL

Wiper control shall consist of a two (2)-speed individual windshield wiper control with intermittent feature and windshield washer controls.

The wipers shall also activate with the automatic (on/off) rain lamp wiper activated headlamps.

AM/FM RADIO

There shall be an AM/FM stereo radio as part of this premium radio package with seven (7) premium speakers on the Super and Crew Cab. This system shall be mounted in the dash.

BATTERY SYSTEM

A single starting battery system shall be provided consisting of two (2) 12 volt, 750 CCA, maintenance-free batteries.

ELECTRICAL SYSTEM

The 12-volt electrical system shall be maintained by a dual alternator set-up provided by the chassis manufacturer. The dual alternators combined shall provide a total output of 397 amperes.

FORD POWER EQUIPMENT GROUP

The electrical power equipment group shall be provided on the chassis.

The option package shall include the following:

- Accessory Delay
- Manually telescoping two-way folding trailer tow mirrors w/power/heated glass, heated convex spotter mirror, integrated clearance lamps, turn signals
- MyKey owner controls feature
- Perimeter anti-theft alarm
- Power 1st row (front-seat) windows w/one-touch up/down
- Power 2nd row (rear-seat) windows (Crew Cab)
- Power locks
- Remote keyless entry

BULLDOG FIRE APPARATUS DEMO UNIT

EXTERIOR LIGHTING

Exterior lighting shall meet or exceed Federal Department of Transportation, Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements in effect at time of proposal. Front headlamps shall be Quad-beam, jewel-effect halogen type and comply to all FMVSS requirements.

The headlights shall be automatically activated (automatic on/off) with windshield wipers. Headlight high beam automatic dimming shall be included.

Five (5) clearance and marker LED lights shall be installed across the leading edge of the cab.

CHASSIS CAB COLOR

Ford Vermillion Red.

CHASSIS RELATED ACCESSORIES

RELOCATE UREA TANK/FILL

The chassis urea tank and fill shall be moved to the LS frame rail, ahead of the rear axle. Fill to be in the LS forward fender panel. Chassis wiring harness shall be extended via an extension harness. Urea line also to be extended.

CAB CONTROL CONSOLE

There shall be one (1) cab control console installed in the chassis between the cab front seats. This console shall be fabricated from .125" aluminum and shall be as large as possible and bolted into place. This console shall have a removable top cover plate, which shall be retained by stainless steel counter-sunk fasteners.

The console shall accommodate all required electrical connections, sirens, light controls, switch banks, multiplex control heads, and any other electrical equipment as specified. Storage for binders and maps to be provided based on available space, to be determined.

The console shall be coated with gray splatter finish to aid in abrasion resistance.

12-VOLT POWER LEADS

One (1) set of 12-volt power leads shall be installed on the apparatus. The power leads shall terminate inside the cab center console.

The power leads shall consist of One (1), 12ga. B+ power and One (1), 12ga. ground. Both leads shall be approx. 24.0" long and terminate with solder-less barrel type connectors.

The leads shall be connected battery direct and be un-fused.

BULLDOG FIRE APPARATUS DEMO UNIT

BLUE SEA 12-VOLT ACCESSORY PANEL

A Blue Sea Systems 435 BSS water resistant accessory panel shall be provided in the center console area allowing for quick and easy way to recharge electronic devices in the apparatus. The panel shall have two (2) 2.1 amp dual USB chargers and one (1) 12-volt socket charger, each provided with protective covers.

The panel is also provided with an illuminated 15 amp circuit breaker switch to shut off the panel preventing parasitic draw.

MAP LIGHT

One (1) LED Map Light shall be installed in the chassis cab. The light shall be activated by a switch integral to the light. The light shall be installed on the cab console.

"DO NOT MOVE APPARATUS" INDICATOR

A flashing red indicator light (located in the driving compartment) shall be illuminated automatically per the current edition of NFPA. The light shall be labeled "Do Not Move Apparatus If Light Is On".

The same circuit that activates the Do Not Move Apparatus indicator shall activate a steady tone alarm when the parking brake is released.

MASTER BATTERY SWITCH

There shall be a master battery switch provided in the cab within easy reach of the driver. A green indicator light shall be provided in the cab to notify the driver of the status of the battery system.

INFORMATION CENTER

All standard switching shall be provided. Neither a color display nor a vacuum florescent display shall be provided with the multiplex system installation.

OPEN DOOR INDICATOR LIGHT

A red "open door" indicator light shall be provided inside the cab, in clear view of the driver, to warn of an open compartment door.

HIGH IDLE

A high idle switch shall be provided by the apparatus manufacturer on the instrument panel inside the cab. Activating the switch shall cause the vehicle to automatically maintain a preset engine rpm.

A green indicator light shall be provided adjacent to the switch. The light shall be labeled "OK To Engage High Idle."

BULLDOG FIRE APPARATUS DEMO UNIT

PRE-WIRED ANTENNA CABLES

There shall be two (2) RG58U coax cables pre-wired by the body builder from the chassis roof to the cab center console. Cables to be clearly labeled and secured within the console. Antenna bases to be protected by removable covers.

AIR INTAKE EMBER SEPARATOR

The air inlet shall be equipped with a stainless-steel mesh to separate water and burning embers from the air intake system such that particulate matter larger than 0.039" (1.0 mm) in diameter cannot reach the air filter element. This shall comply with NFPA 1901 and 1906 standards.

CAB STEP BARS

Polished Stainless Steel Step Bars shall be installed beneath the cab and crew area doors on both sides of the chassis.

CAB STEP LIGHTS

There shall be four (4) TecNiq Series E10-WS00-1 LED step lights provided.

There shall be one (1) light installed at each cab entry door.

The lights shall be activated with marker lights turned on and the transmission is in Park position.

BACK-UP CAMERA:

One (1) Nagy 7" color back up camera system, 8212-IR Camera Kit, shall be installed on the apparatus.

The camera shall display the real time view of the area directly behind the apparatus. Monitor shall attach to the windshield in replacement of the chassis rear view mirror.

HELMET STORAGE PROVIDED BY FIRE DEPARTMENT

NFPA 1901, 2016 edition, section 14.1.7.4.1 requires a location for helmet storage be provided. There is no helmet storage on the apparatus as manufactured.

The fire department shall provide a location for storage of helmets.

VEHICLE DATA RECORDER (NOT PROVIDED)

NFPA 1901, 2016 edition, section 4.11.1 requires all apparatus be equipped with an on-board vehicle data recorder. The VDR is intended to be used by the fire department to monitor seat belt use as a tool for enforcing a seat belt policy that enhances the safety of apparatus occupants.

The vehicle data recorder is not available as required from the commercial chassis manufacturer. Per Fire Department specification of a commercial chassis, there shall be no vehicle data recorder on the apparatus. This apparatus shall be non-compliant to NFPA 1901 standards effective at time of contract execution.

BULLDOG FIRE APPARATUS DEMO UNIT

VEHICLE DATA RECORDER (NOT PROVIDED) (Continued)

Seat Belt Monitoring System

NFPA 1901, 2016 edition, section 14.1.3.9 requires a seat belt warning system be provided. The seat belt warning device is intended to assist the driver or officer in determining whether all occupants are seated and belted before the vehicle is driven. Without this device, the driver must manually determine that all occupants are seated and belted before the apparatus is placed in motion.

The seat belt warning system is not available as required from the commercial chassis manufacturer, or not requested by the customer. Per Fire Department specification of a commercial chassis, there shall be no seat belt warning system on the apparatus. The purchasing authority is consciously choosing to accept an apparatus without a tool that the NFPA Technical Committee on Fire Department Apparatus believes all fire departments should use to promote and enforce seat belt compliance.

This apparatus shall be non-compliant to NFPA 1901 standards effective at time of contract execution.

BACK-UP ALARM:

Federal Evacuator Plus, model 210331SSG, back-up alarm to be provided. 97 dB(A)

REAR SUSPENSION STABILIZATION:

Rear suspension to include SuperSprings® stabilizing system to level the load created by water tank and to reduce body roll. Modification to be performed without removal of OEM spring pack and should not compromise ride quality.

MAXIMUM SEATING CAPACITY:

There shall be a label located in the driver's view specifying the maximum number of personnel the vehicle is designed to carry per NFPA standards.

REMAIN SEATED:

There shall be a label located in the driver's view that states "Occupants Must Remain Seated While Vehicle is in Motion".

WHEEL CHOCKS

There shall be one (1) pair of folding Ziamatic, Model SAC-44-E, aluminum alloy, Quick-Choc wheel blocks with easy-grip handle provided.

WHEEL CHOCK BRACKETS

There shall be one (1) pair of Zico, Model SQCH-44-H, horizontal mounting wheel chock brackets provided for the Ziamatic, Model SAC-44-E, folding wheel chocks. The brackets shall be made of aluminum and consist of a quick release spring loaded rod to hold the wheel chocks in place. The brackets shall be mounted below the left side rear compartment.

BULLDOG FIRE APPARATUS DEMO UNIT

TIRE PRESSURE MANAGEMENT

There shall be a RealWheels LED AirSecure™ tire alert pressure management system provided, that shall monitor each tire's pressure. A sensor shall be provided on the valve stem of each tire for a total of six (6) tires.

The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 10 and 200 psi. The sensor shall activate an integral battery-operated LED when the pressure of that tire drops 5 to 8 psi.

Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start to flash.

MUD FLAPS

Mud flaps shall be installed behind the front and rear wheels of the apparatus. A polished stainless steel Ward Apparatus logo will be on each rear mud flap.

CHASSIS EXHAUST HEAT SHIELD

The chassis exhaust system shall have heat shielding installed between the exhaust pipe and the bottom of the body.

OVERALL HEIGHT

There shall be a label located in the driver's view that states the overall height (in feet and inches) of the vehicle from the ground. This measurement shall be taken on flat ground with the tires properly inflated, in the unloaded condition, at that highest point of the vehicle.

OVERALL LENGTH

There shall be a label located in the driver's view that states the overall maximum length of the apparatus in feet and inches.

OVERALL WIDTH

There shall be a label located in the driver's view that states the overall maximum width of the apparatus in feet and inches.

FASTEN SEATBELT

There shall be a label located in the cab that states "Occupants Must Fasten Seat Belts Before Vehicle is in Motion."

DO NOT RIDE

There shall be two (2) labels located on the rear of the apparatus, one on each side, that states "Danger: Do Not Ride on Rear Step While Vehicle is in Motion - Death or Serious Injury May Result".

BULLDOG FIRE APPARATUS DEMO UNIT

DELIVERY REQUIREMENTS

VEHICLE ROAD AND SYSTEMS INTEGRITY TESTING

A complete and thorough road test and systems integrity test shall be conducted at the time of vehicle completion, and prior to delivery. The road-test portion shall encompass differing types of road conditions and terrain, including but not limited to hills, curves, rough roads, rural high-speed environments, urban stop and go environments, and other conditions to verify vehicle manufacturing and delivery integrity.

A systems integrity test shall be performed on the completed vehicle. In this test, the completed vehicle shall have all systems checked for proper operation and conformity to manufacturing specs.

This test shall include but not be limited to a full 12-volt electrical test, a full 120-volt electrical test, all doors shall be checked for proper closure, all doors, hatches, bellows, etc. shall have a water test performed to check for leaks, all roll out trays, tool boards, drawers, etc. shall be checked for proper opening and closing, tire chains (if included) shall be operated, and any system having a mechanical function shall be tested.

MANUALS

All manuals related to sub-system components for included optional equipment to be provided at the time of customer acceptance.

FIRE PUMP - (HALE)

PUMP COMPARTMENT (SIDE)

The complete apparatus pump compartment shall be constructed of a combination of aluminum structural tubing and formed aluminum sheet metal.

The structure shall be welded utilizing the same A.W.S. Certified welding procedure as used on the structural body module. These processes shall ensure the quality of structural stability of the pump compartment module.

The pump compartment module shall be separated from the apparatus body with a gap. This gap is necessary to accommodate the flexing of the chassis frame rails that are encountered while the vehicle is in transit so that harmful torsional forces are not transmitted into the structural framework.

PUMP MODULE MOUNTING SYSTEM (SIDE)

The outer edges of the pump house shall be wrapped with stainless, providing a picture frame-inset appearance for the pump panels as specified below.

BULLDOG FIRE APPARATUS DEMO UNIT

PUMP COMPARTMENT WORK LIGHTS (LED)

Two (2) LED work light shall be installed in the pump compartment module to illuminate the piping and plumbing components.

LEFT SIDE OPERATORS PANEL & PUMP PANEL

The pump operator's panel shall be located on the left side of the apparatus pump compartment. The panel shall be split into an upper and lower section.

The material of the operator's panel shall match that of the overlays and right-side panels specified.

The upper panel shall house gauges and controls and be hinged to allow easy access to components. The door shall have a stainless-steel hinge, dual point chrome push button latches, and a rubber seal provided to prevent excessive moisture from entering or leaving the pump house.

The lower panel on the left side shall be a removable panel attached with mechanical fasteners. Valve controls shall be immediately adjacent to its respective gauge.

The valve controls shall be properly labeled, and color coded for ease of use.

VALVE CONTROL – SIDE MOUNT

Unless specified otherwise, the discharge valves shall be controlled from a side mounted locking push-pull valve actuation control assembly that shall be installed on the specified discharge.

The assembly shall have a T-handle chrome plated with an ergonomically designed surface to allow for a secure grip to turn and lock the handle.

PUMP PANEL LIGHTS

There shall be adequate illumination provided at the side pump panels with the installation of two (2) brushed stainless steel shielded light assemblies, one (1) on the left and one (1) on the right-side pump compartment.

Each shield shall contain the maximum number of lights permitted in the space available of LED strip lights.

PUMP PANEL LIGHT ACTIVATION

One (1) pump panel light at the operator's panel shall be illuminated at the time the pump is ready to pump and it is "OK TO PUMP". The Pump shift has been completed and the chassis automatic transmission is engaged.

The remaining lights shall be controlled by a switch located on the side operator's panel.

BULLDOG FIRE APPARATUS DEMO UNIT

PUMP COMPARTMENT FRONT OVERLAY

The front wall of the pump compartment module shall be overlaid entirely with aluminum diamond plate material fastened with mechanical fasteners.

PUMP COMPARTMENT WIDTH

The width of the pump compartment shall be 24.00 inches.

RIGHT SIDE PUMP PANELS STYLE

There shall be two (2) separate panels on the right side of the pump compartment, one (1) upper and one (1) lower. Each panel shall be removable for service accessibility with mechanical fasteners.

RIGHT & LEFT SIDE BRUSHED STAINLESS-STEEL PANELS

The panels for the pump compartment on the left and right side shall be made from 14 gauge stainless steel with a durable black finish.

RUNNING BOARDS

The pump compartment running boards shall be made of an aluminum tubular framework. The tubular frame supports all loads by transmitting the loads through the pump compartment structure directly to the chassis frame rails.

The running boards shall be independent of the apparatus body and shall be integrated to the pump compartment structure only, eliminating any pump compartment to body interference.

EMBOSSSED ALUMINUM DIAMOND PLATE OVERLAYS

The side running boards shall have a .188-inch embossed aluminum diamond plate overlays installed. The stepping areas shall be as large as possible.

APPARATUS PLUMBING LABELING

Verbiage tag bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These tags shall be designed and manufactured to withstand the specified apparatus service environment and shall be.

APPARATUS PLUMBING LABELING

The verbiage tag bezel assemblies shall include a chrome-plated panel-mount bezel with durable easy-to-read UV resistant inserts featuring the specified verbiage and color coding. These verbiage and color inserts shall be meet NFPA standards.

BULLDOG FIRE APPARATUS DEMO UNIT

CLASS 1 SENTRY GOVERNOR

The apparatus shall be equipped with the Class1 Sentry Pressure Governor System. The Sentry Pressure Governor System (SPGS) is a J1939 CAN based pressure governing system that consists of a Sentry display, Twister throttle, pressure transducers and associated wiring.

The SPGS' advanced diagnostic capability shall instantly notify the operator of any out of parameter condition.

It shall also notify the operator of actions performed and suggest alternative operation methods in the event of an out of parameter condition. Graphic diagnostics shall also provide wiring and troubleshooting information.

The display shall be capable of storing up to 12 different languages. It shall provide the operator with the ability to adjust the display brightness for day and night mode operations.

The following parameters shall be visible at all times:

- Pump Intake Pressure
- Pump Discharge Pressure
- Engine RPM
- Engine Oil Pressure
- Engine Coolant Temperature
- Transmission Temperature
- System Voltage
- Throttle Ready Interlock Status
- Pump Engaged Interlock Status
- OKAY to Pump Interlock Status
- Operating Mode Status (RPM or Pressure)
- Target Pressure Indication (when in pressure mode)

TWISTER THROTTLE

The Twister throttle is a J1939 CAN based throttle device that shall communicate directly with the Sentry display.

It shall feature a robust knob operator that can be configured to operate the engine throttle in either the clockwise or counterclockwise directions. It shall feature a large stationary idle button in the center of the knob. It shall also provide the operator with "Throttle Ready" and "Throttle Active" LED indicators.

The Twister throttle can be mounted away from the Sentry Display giving the operator hand control at waist level. This will also allow the Sentry display to be mounted at eye level assuring that the operator has the most comfortable and ergonomic control possible.

BULLDOG FIRE APPARATUS DEMO UNIT

PRESSURE RELIEF VALVE

A Class 1 stainless steel pressure relief valve with a range of adjustment from 50 to 200 PSI shall be provided and installed inside pump compartment piped to the suction side of the pump. The valve shall be preset at 125 PSI suction inlet pressure, unless otherwise shop noted.

The valve shall be installed inside the pump compartment where it will be easily accessible for future adjustment.

For normal pumping operations, the relief valve shall not be capped and there shall be a placard stating "DO NOT CAP" installed

TESTING PORTS

Test port connections for pressure and vacuum shall be provided at the pump operator's panel. One (1) shall be connected to the intake side of the pump, and the other to the discharge manifold side of the pump.

Each port shall have 0.25 inch (6.35 mm) standard pipe thread connection and be manufactured of non-corrosive polished stainless steel or brass plugs.

TANK LEVEL GAUGE

There shall be a Class 1 model #ITL-40 tank level gauge provided and installed at the pump operator's panel location. The tank level gauge shall indicate the liquid level for water in increments of 1/8th of a tank.

The tank level gauge shall include a pressure transducer mounted on the outside of the tank, a super bright LED 4-light display with visual indication at nine accurate levels, and a set of weather resistant connectors.

PUMP COMPARTMENT TOP OVERLAY

The top of the pump compartment shall be overlaid with 1/8" embossed aluminum diamond plate.

SINGLE-STAGE MIDSHIP PUMP

The pump shall have the capacity of 1500 gallons per minute, measured in U.S. Gallons.

The pump shall be a Hale Fire Pump, DSD single stage.

PUMP ASSEMBLY

The entire pump shall be assembled and tested at the pump manufacturer's factory. The pump shall be driven by a drive line from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable pump to meet and exceed its rated performance.

BULLDOG FIRE APPARATUS DEMO UNIT

PUMP ASSEMBLY (Continued)

The entire pump shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by (NFPA) 1901, Standard for Automotive Fire Apparatus. Pump shall be free from objectionable pulsation and vibration.

The pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI (2069 bar). All metal moving parts in contact with water shall be of high-quality bronze or stainless steel. Pump utilizing castings made of lower tensile strength cast iron not acceptable.

Pump body shall be vertically split on a single plane for easy removal of entire impeller assembly including clearance rings.

Pump shaft to be rigidly supported by two bearings for minimum deflection. The bearings shall be heavy-duty, deep groove ball bearings in the gearbox, and they shall be splash lubricated. Shaft seal comes standard with face-type, self-adjusting corrosion- and wear-resistant mechanical seals.

The pump impeller shall be hard, fine grain bronze of the mixed flow design; accurately machines, hand-ground and individually balanced. The vanes of the impeller intake eye shall be hand ground and polished to a sharp edge and be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body.

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox.

GEAR BOX

The gearbox shall be manufactured and tested at the pump manufacturer's factory.

Pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. of torque of the engine. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2.75 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.

All gears, drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened, to give an extremely accurate gear for long life, smooth, quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust.

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

BULLDOG FIRE APPARATUS DEMO UNIT

GEAR BOX (Continued)

If the gearbox is equipped with a power shift, the shifting mechanism shall be a heat treated, hard anodized aluminum power cylinder, with stainless steel shaft.

An in-cab control for rapid shift shall be provided that locks in road or pump.

For automatic transmissions, three green warning lights shall be provided to indicate to the operator(s) when the pump has completed the shift from Road to Pump position. Two green lights to be located in the truck driving compartment and one green light on pump operator's panel adjacent to the throttle control.

For manual transmissions, one green warning light will be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

MECHANICAL PUMP SEAL

A mechanical seal shall be supplied on the inboard side of the pump. The mechanical seal must be two (2) inches in diameter and shall be spring-loaded, maintenance-free and self-adjusting.

Mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber cup, and a tungsten carbide seat.

PUMP SHIFT

The drive unit shall be provided with an air pump shift system. The control valve shall be a spring-loaded guard lever that locks in "Road" or "Pump" mode.

To the left of the pump shift control, there shall be two indicator lights to show the position of the pump when the control is moved to "Pump" position.

A green light shall be energized when the pump shift has been completed and shall be labeled "PUMP ENGAGED"; a second green light shall be labeled "OK TO PUMP" energized when both the pump shift has been completed and the chassis automatic transmission is engaged.

A third green indicator light shall be installed adjacent to the throttle on the pump operator's panel. This light shall be labeled "Throttle Ready".

In addition to this indicator light, an additional indication shall be provided to the pump operator at the panel when the pump is ready to pump. This additional indication shall be that one (1) of the operator's panel illumination lights will only activate when the "OK TO PUMP" indicator is lit.

AIR PUMP SHIFT LOCATION

The pump shift shall be mounted in the "best fit" location as determined by the apparatus manufacture.

BULLDOG FIRE APPARATUS DEMO UNIT

AIR COMPRESSOR - PUMP SHIFT

Since the mini pumper chassis does not have a chassis air system, an alternate air system shall be provided. This system shall include a 12-volt air compressor and small capacity tank. The compressor and tank shall be installed in a location that does not interfere with other equipment.

The compressor shall maintain air system pressure. A pressure switch shall sense when the system pressure drops and automatically start the compressor, (providing the battery switch is "on") which then shall run until pressure is restored.

AIR PRIMER SYSTEM

The priming system shall be a Trident Emergency Products compressed air powered high efficiency, multi-stage, venturi-based Air Prime System.

All wetted metallic parts of the priming system are to be of brass and stainless-steel construction. A single panel mounted control will activate the priming pump and open the priming valve to the pump. The priming components shall be mounted above the highest priming point on the suction side of the pump to permit air removal and allow for drainage.

The primer shall also automatically drain when the panel control actuator is not in operation. The inlet side of the primer shall include a brass 'wye' type strainer with removable stainless steel fine mesh strainer to prevent entry of debris into the primer body.

The system shall employ an 80 PSI pressure protection valve, located on the chassis auxiliary air tank.

PRIMER CONTROL

There shall be one (1) push button control to actuate the primer control valve at the operator's panel.

AUXILIARY COOLING SYSTEM

A supplementary heat exchange cooling system shall be provided to allow the use of water from the discharge side of the pump for cooling the engine water.

Heat exchanger shall be cylindrical type and shall be a separate unit. It shall be installed in the pump or engine compartment with the control located on the pump operator's control panel. Exchanger shall be plumbed to the master drain valve.

DISCHARGE AND INLET MANIFOLDS

A pump manifold inlet shall be provided on the pump as required for the layout. The inlet(s) shall protrude up to 2.00 inches away from the side panels and maintain a low connection height.

A discharge manifold shall also be added to the pressure side of the pump to feed the specified discharge waterways.

BULLDOG FIRE APPARATUS DEMO UNIT

MAIN PUMP INLET-LEFT SIDE

A 6.00-inch pump manifold inlet shall be provided on the left side of the pump. The inlet shall protrude up to 2.00 inches away from the side panel and maintain a low connection height.

The main pump inlet shall have National Standard Threads and includes a removable screen designed to provide cathodic protection for reducing deterioration in the pump.

6" CHROME PLATED BRONZE CAP

There shall be one (1) 6.00-inch-long handled chrome plated cap installed on the Steamer Inlet.

The cap shall be National Standard Thread.

MAIN PUMP INLET-RIGHT SIDE

A 6.00-inch pump manifold inlet shall be provided on the right side of the pump. The inlet shall protrude up to 2.00 inches away from the side panel and maintain a low connection height.

The main pump inlet shall have National Standard Threads and includes a removable screen designed to provide cathodic protection for reducing deterioration in the pump.

6" CHROME PLATED BRONZE CAP

There shall be one (1) 6.00-inch-long handled chrome plated cap installed on the Steamer Inlet.

The cap shall be National Standard Thread.

MASTER DRAIN VALVE

A Class 1 manifold type drain valve shall be installed in the pump compartment. All pump drains shall be connected to the master drain valve. The drain valve shall be controlled from the left side lower pump house sill. The control shall be a hand wheel knob marked "open" and "closed".

The drain shall be located such that it shall not interfere with pumping operations or function such as soft suction hoses, etc. nor shall it protrude past the outer edge of the apparatus, to prevent damage to the valve.

PUMP COOLING LINE

There shall be a .38-inch line running from the pump to the water tank to assist in keeping the pump water from overheating. A valve shall be installed on the operator's panel.

PUMP ANODES

Two (2) pump anodes shall be installed in the pumping system, one (1) on the discharge side and one (1) on the suction side, to prevent damage from galvanic corrosion within the pump system.

BULLDOG FIRE APPARATUS DEMO UNIT

STAINLESS STEEL PLUMBING

All auxiliary suction and discharge plumbing related fittings, and manifolds shall be fabricated with a minimum of 3.00 inch, or greater as required by design, schedule 10 stainless steel pipe, brass or high-pressure flexible piping with stainless steel couplings. All piping components and valves shall be non-painted, unless otherwise specified.

All piping welds shall be wire brushed and cleaned for inspection and appearance.

The high-pressure flexible piping shall be black SBR synthetic rubber hose with 300 PSI working pressure and 1200 PSI burst pressure for flexible piping sizes 1.50 inches through 4.00 inches. Sizes .75-inch, 1.00 inch and 5.00 inches are rated at 250 PSI working pressure and 1000 PSI burst pressure. All sizes are rated at 30 in HG vacuum.

Reinforcement consists of two plies of high tensile strength tire cord for all sizes and helix wire installed in sizes 1.00 inch through 5.00 inches for maximum performance in tight bend applications.

The material has a temperature rating of -40 degrees Fahrenheit to +210 degrees Fahrenheit.

The stainless-steel full flow couplings are precision machined from high tensile strength stainless steel.

All female couplings are brass. Mechanical grooved and male .75-inch and 1.00-inch couplings are brass.

A high tensile strength stainless steel ferrule with serrations on the I.D. is utilized to assure maximum holding power when fastening couplings to hose.

DRAIN VALVES

All manual drains shall be ¾" J-style lift handle type.

LEFT SIDE INLET

There shall be one (1) gated suction inlet with .75-inch bleeder installed on the left side of the apparatus with the following specified components.

INTAKE VALVE

A 2.50-inch Akron Brass 8000 series swing-out valve with stainless steel ball.

INTAKE VALVE CONTROL

The intake control valve shall be a 'swing out type' direct operation manual lever actuator at the valve.

BULLDOG FIRE APPARATUS DEMO UNIT

INTAKE PLUMBING

The plumbing shall consist of 2.50-inch piping and shall incorporate a manual drain control installed below the pump area for ease of access.

SUCTION/INTAKE TERMINATION

The termination shall include the following components:

- One (1) 2.50-inch NST swivel female straight adapter with screen
- One (1) 2.50-inch self-venting plug, secured by a chain.

INLET LOCATION

The inlet shall be located on the pump panel in the forward position.

LEFT SIDE DISCHARGE

There shall be one (1) gated discharge installed on the left side of the apparatus with the following specified components.

DISCHARGE VALVE

A 2.50-inch Akron Brass 8000 series swing-out valve with a stainless-steel ball.

DISCHARGE VALVE CONTROL

The control valve shall be a 'swing out type' direct operation manual lever actuator at the valve.

DISCHARGE PLUMBING

The plumbing shall consist of 2.50-inch piping and shall incorporate a manual drain control installed below the pump area for ease of access.

DISCHARGE TERMINATION

The discharge termination shall include the following components:

- One (1) 2.50-inch Male NST adapter
- One (1) 2.50-inch NST 30-degree polished elbow
- One (1) 2.50-inch female self-venting cap, secured by a chain.

RIGHT SIDE DISCHARGE

There shall be one (1) gated discharge installed on the right side of the apparatus with the following specified components.

BULLDOG FIRE APPARATUS DEMO UNIT

DISCHARGE VALVE

A 3.00-inch Akron Brass 8000 series Slo-Cloz swing-out valve with a stainless-steel ball.

DISCHARGE VALVE CONTROL

The discharge shall be controlled from the pump operator's panel location.

DISCHARGE PLUMBING

The plumbing shall consist of 3.00-inch piping and shall incorporate a manual drain control installed below the pump area for ease of access.

DISCHARGE TERMINATION

The discharge termination shall include the following components:

One (1) 3.00 inch (77 mm) NST adapter

One (1) 3.00 inch (77 mm) NST female swivel by 5.00 inch (125 mm) Storz with 30 degree elbow

One (1) 5.00 inch (125 mm) Storz cap, secured by a chain

RIGHT REAR DISCHARGE

There shall be one (1) gated discharge installed on the right rear of the apparatus with the following specified components.

DISCHARGE VALVE

A 2.50-inch Akron Brass 8000 series Slo-Cloz swing-out valve with a stainless-steel ball.

DISCHARGE VALVE CONTROL

The discharge shall be controlled from the pump operator's panel location.

DISCHARGE PLUMBING

The plumbing shall consist of 2.50-inch piping and shall incorporate a manual drain control installed below the pump area for ease of access.

DISCHARGE TERMINATION

The discharge termination shall include the following components:

One (1) 2.50 inch NPT x 2.50 inch MNST chrome plated brass fitting

BULLDOG FIRE APPARATUS DEMO UNIT

CROSSLAY MODULE

The crosslay hose beds shall be in the upper portion of the pump compartment.

The crosslay module shall be manufactured of a bolt-on design configuration constructed of smooth aluminum materials that shall span the entire width of the apparatus pump compartment.

DOUBLE STACK CROSSLAYS

The crosslay area shall be constructed with a minimum fifteen 15.00-inch depth for laying a double stack of each hose size as specified below.

Chicksan swivels shall be installed just below the floor of each crosslay bed, high enough for hose couplings to be accessed and tightened on to chicksans.

Chicksan swivels shall swing from left to right to allow attached hose to be deployed from either side of the apparatus.

CROSSLAY DIVIDER

The crosslay divider shall be fabricated of .188-inch smooth aluminum and shall have a dual-action sanded finish.

HOSE BED FLOORING

The hose bed areas of the pump compartment shall be lined with a black matting material.

1-3/4" CROSSLAYS

An adjustable crosslay with the following specified components shall be provided for up to 200 feet of 1.75-inch hose. This section shall be the first section, directly behind the cab.

There shall be a total of two (2) provided.

DISCHARGE VALVES

A 2.00-inch Akron Brass 8000 series swing-out valve with a stainless-steel ball.

DISCHARGE VALVE CONTROLS

The discharge shall be controlled from the pump operator's panel location.

DISCHARGE PLUMBING

The plumbing shall consist of 2.00-inch piping and shall incorporate a manual drain control installed below the pump area for ease of access.

BULLDOG FIRE APPARATUS DEMO UNIT

DISCHARGE TERMINATIONS

The discharge termination shall include the following components:

One (1) 2.00-inch NPT x 1.50-inch NST brass chicksan swivel for each crosslay.

CROSSLAY COVER

A vinyl crosslay hose bed cover shall be provided to conceal the entire crosslay hose bed area.

The cover shall be securely fastened to the outside rails with 1/4-turn style latches. The right and left ends of the cover shall have flaps with heavy duty zippers sewn in for ease of access.

The zipper pull tabs shall have gripper tags installed, enabling ease of access to the stored hose.

CROSSLAY TOP & SIDES COVER COLOR

The crosslay hose bed covers shall be red in color.

CROSSLAY HOSE BED LIGHT

There shall be one (1) LED light in a bezel provided and installed on the front face of the body to illuminate the crosslay hose bed.

CROSSLAY LIGHT ACTIVATION

The crosslay light shall be activated when the park brake is set.

DISCHARGE GAUGES

A Class 1 2.50-inch gauge shall be supplied for reading the pressure of each discharge greater than 1.50 inches in diameter, unless otherwise specified.

The gauge shall be a model LFP220.

GAUGE SCALE

Each gauge shall be marked for reading a pressure range of 0-400 PSI.

GAUGE FACE COLOR

Each gauge shall have black markings on a white face.

BULLDOG FIRE APPARATUS DEMO UNIT

TANK TO PUMP LINE

The connection between the tank and the pump shall be capable of the flow recommendations as set forth in (NFPA) 1901, Standard for Automotive Fire Apparatus, latest revision and shall be tested to those standards when the pump is being certified.

One (1) non-collapsible flexible hose and valve shall be incorporated into the tank to pump plumbing to allow movement in the line as the chassis flexes to avoid damage during normal road operation.

Four (4) inch stainless steel schedule 10 piping shall be used to complete the connection from the tank to pump valve to the water tank.

TANK TO PUMP CHECK VALVE

There shall be a tank to pump check valve, conforming to NFPA standard requirements to prevent water from back flowing at an excessive rate if the pump is being supplied from a pressurized source.

The check valve shall be mounted as an integral part of the pump suction extension.

A hole up to .25 inch (6.00 mm) is allowable in the check valve to release steam or other pressure buildup so that the void between the valve and check valve may drain of water that could be subject to freezing.

TANK TO PUMP VALVE

A 3.00-inch Akron Brass 8000 series swing-out valve with a stainless-steel ball.

VALVE CONTROL

The valve shall be controlled from the pump operator's panel location.

TANK FILL LINE

One (1) 1.50-inch tank fill/recirculating line shall be installed from the pump directly to the booster tank.

TANK FILL VALVE

A 1.50-inch Akron Brass 8000 series swing-out valve with a stainless-steel ball.

VALVE CONTROL

The valve shall be controlled from the pump operator's panel location.

BULLDOG FIRE APPARATUS DEMO UNIT

CLASS A FOAM SYSTEM

HALE SMARTFOAM 2.1A

A Hale SmartFOAM 12-volt DC powered variable-speed electronic direct-injection foam-concentrate proportioning system with a 2.1A-gpm-foam concentrate pump shall be installed on the apparatus to provide foam proportioning. The pump shall be capable of handling Class A foam concentrate only and be operated by a full-function panel mounted digital display.

The system shall operate via a paddlewheel flow sensor mounted in a 3-inch stainless steel double waterway check-valve manifold that includes a ½-inch chemical injection point check valve. The foam proportioning system shall be rated at 2.1A-gpm-foam concentrate flow rate with maximum operating pressure of 250 PSI.

The system shall operate via a paddlewheel flow sensor mounted in a 3-inch stainless steel double waterway check-valve manifold that includes a ½-inch chemical injection point check valve.

This double check-valve assembly is required for backflow prevention and NFPA compliance. A single check valve assembly will not be permitted.

SMARTFOAM DIGITAL CONTROL DISPLAY

The foam system shall be equipped with a Class 1 UltraView SmartFOAM Controller and a foam induction pump. The electronic control unit shall permit the pump operator to perform the following control and operation functions for the foam proportioning system:

Show the water flow per minute, foam percentage, total water flowed, and total foam flowed on the main screen without having to press any buttons.

Maintain a running total of the amount of water and foam used during the current power cycle.

The SmartFOAM Controller shall provide on-screen tutorials to assist the user during calibration.

Provide multiple language support. Allow push-button modification of the foam proportioning rate from 0.1% to 10.0% in 0.1% increments.

The SmartFOAM Controller will always begin operation at the preset foam proportioning rate which is configured with a password protected set-up screen.

The pump discharge line shall be equipped with a bubble tight check valve, rated at 500 psi (34 bar) to prevent water flow into the concentrate pump from the apparatus fire pump. This valve shall be made from brass or 300 series stainless steel. This valve shall have a cracking pressure of 4-6 psi (0.3-0.4 bar) to prevent flowing concentrate through the pump due to head pressure from the concentrate reservoir.

BULLDOG FIRE APPARATUS DEMO UNIT

SMARTFOAM DIGITAL CONTROL DISPLAY (Continued)

When the manual dual tank selector, single tank flush valve or a single tank system without flushing capabilities is installed a three-way bypass valve shall be provided on the discharge of the foam pump to permit operation of the foam concentrate pump for test and calibration purposes without injecting foam concentrate into the water discharge. The bypass valve shall be capable of being panel mounted.

Protect the foam pump from being run "dry" by showing a "low foam" warning when the low-level tank switch is activated and only allowing the foam pump to run for another sixty (60) seconds before turning off the foam pump and showing a "no foam" warning.

Field serviceable foam concentrate strainer(s) shall be installed in the foam concentrate suction line(s).

Foam concentrate proportioning systems that use a venturi (either directly or indirectly) to measure water flow, and therefore cause a restriction to that flow, will not be accepted.

FOAM SYSTEM TESTING

The apparatus foam system shall be tested, and the Water Flow meter shall be certified by the manufacturer prior to delivery.

FOAM SYSTEM SUPPLY

The system shall be supplied by a single foam tank that shall be monitored by the control display. The display shall flash a "low concentrate" warning for two minutes when the foam tank runs low.

In the event that no additional concentrate is added to the tank, the foam concentrate pump shall be deactivated.

FOAM TANK

A 10-gallon foam tank with square hinged lid, equipped with a hold down device shall be installed and plumbed with non-corrosive piping to the foam system. The fill tower shall be approximately 10.00 inch by 10.00 inch.

A label shall be affixed to the foam tank fill indicating: "WARNING" Class A foam tank fill, do not mix brands or types of foam.

This foam tank will be integral with the main water tank.

FOAM TANK DRAIN

There shall be a 1.00-inch quarter turn drain valve installed to drain the foam tank. The valve shall be installed in the pump house with a drain line extended to the side running board.

The drain line shall be labeled "FOAM DRAIN".

BULLDOG FIRE APPARATUS DEMO UNIT

FOAM LEVEL GAUGE

There shall be a Class 1 model #ITL-4 foam tank level gauge provided and installed at the pump operator's panel location.

The foam tank level gauge shall indicate the liquid level for water in increments of 1/8th of a tank.

The foam tank level gauge shall include a pressure transducer mounted on the outside of the tank, a super bright LED 4-light display with visual indication at nine accurate levels, and a set of weather resistant connectors.

FOAM DISCHARGES

The two (2) crosslays shall be foam capable.

BODY DESIGN

The body shall be modular in design, capable of being removed and remounted on a new chassis. Body integrity and strength to be independent of chassis mounting.

Body is specifically designed to enable custom layout of interior compartments.

BODY MATERIALS

The following shall be the minimum acceptable materials, gauge, and finish used:

Aluminum Sheeting - All exterior panels shall be 5052-H32 aluminum of .125" thickness.

Aluminum Diamond Plate - All diamond plate shall be 3003-H14 aluminum of .125" thickness.

Body Mounting - All body mounting bolts to be minimum Grade 5.

Exterior Fasteners – All exterior nuts, bolts, and screws shall be stainless steel.

CORROSION PROTECTION

Electrolysis Corrosion Kontrol (ECK) shall be used to prevent dissimilar metal corrosion. ECK shall be used for door latches, door hinges, trim plates, fenderettes, etc. ECK shall be applied to every external fastener hole prior to component mounting.

BODY SUPER-STRUCTURE

The body super-structure shall be constructed of square aluminum tubing. All framing and supports shall be welded to create a fully enclosed structure. This construction technique provides high strength and durability and enables custom design of interior compartments.

BULLDOG FIRE APPARATUS DEMO UNIT

BODY SUPER-STRUCTURE (Continued)

The side wall structure shall be constructed of 2.0" x 2.0" x .125" 6063-T52 alloy square aluminum tubing, the side wall structure shall be welded and gusseted to the sub structure.

The compartment top structure shall be constructed of 2.0" x 2.0" x .125" 6063-T52 alloy aluminum tubing and welded to the side-wall structure.

All side walls shall be surfaced using a .125" aluminum sheet, welded and bonded to body side wall structure.

A side body impact rail manufactured of 6063-T52 alloy extruded aluminum shall be welded to the apparatus side wall structure. It shall receive the body side sheet by means of a groove, which runs continually fore to aft of the side wall structure.

BODY CORNERS, CAPPED

The exterior body corners shall be capped with a either polished 14 gauge stainless steel or 1/8" aluminum treadplate.

These body corners create additional protection from physical and environmental damage.

BODY FLOOR CONSTRUCTION

The sub structure shall be constructed of 2.0" x 2.0" x .125 or .250" 6063-T52 alloy square aluminum tubing, welded and gusseted to the side-wall structure for maximum strength and durability.

Two (2) mounting rails of full-length 1.0" x 3.0" 6061-T6 alloy solid aluminum flat-bar shall be welded to the sub structure, the mounting rails to align with the chassis frame rails for mounting of the body to the chassis.

UNDERCOATING

The underside of the vehicle including all metal work shall be sprayed with PPG Corashield P8001 automotive undercoating.

The Corashield product is designed to prevent chipping, cracking, or marring of painted and unpainted surfaces after exposure to high impact sand, gravel, and other abrasive materials.

This undercoating shall aid in preventing corrosion and will provide a sound and vapor barrier to the aluminum body structure.

BODY FRONT SHEETING

The front body sheet shall be fabricated of .125" aluminum diamond plate.

BULLDOG FIRE APPARATUS DEMO UNIT

STONE GUARDS

The front body corners shall have .125" aluminum diamond plate protective guards. The stone guards shall be bolted to the body and provide coverage at a minimum of 24" high from the base of the body.

BODY REAR SHEETING

The rear body sheet shall be fabricated of .125" smooth aluminum sheeting and prepared for the NFPA required Chevron Stripping. (No Painting required).

There shall be a kick plate fabricated of .125" aluminum diamond plate, located below the rear opening.

COMPARTMENT TOPS SHEETING

The compartments tops sheeting shall be fabricated of .125" aluminum diamond plate.

PPG PAINT SPECIFICATIONS

All bright metal fittings, if unavailable in stainless steel, shall be heavily chrome plated.

Critical body and sub-frame area which cannot be primed after assembly shall be pre-painted.

All welded metal surfaces shall be ground to a smooth surface prior to a degreasing and high pressure, high temperature phosphatizing process. The entire surface shall be sprayed with a non-chromate sealing compound to prevent formulation of stains or flash rust on previously phosphatized parts.

The paint applied to the apparatus shall be PPG Industries Delta® brand, applied throughout a multi-step process including at least two coats of each color and clear coat finish.

The coating shall be an infra-red, baked air dried. The coatings shall provide full gloss finished suitable for application by high-pressure airless or conventional low pressure air atomizing spray.

The coatings shall not contain lead, cadmium or arsenic. The polyisocyanate component shall consist of only aliphatic isocyanates, with no portion being aromatic isocyanates in character. The solvents used in all components and products shall not contain ethylene glycol mono-ethyl ethers or their acetates (commercially recognized as cello solves), nor shall they contain any chlorinated hydrocarbons.

The products shall have no adverse effects on the health or nor present any unusual hazard to personnel when used according to manufacturer's recommendations for handling and proper protective safety equipment, and for its intended use.

The coating system, as supplied and recommended for application, shall meet all applicable federal, state and local laws and regulations now in force or at any time during the courses of the bid.

The manufacturer shall supply (upon request) for each product and component of the system, a properly complete OSHA ""Safety Data Sheet".

BULLDOG FIRE APPARATUS DEMO UNIT

PPG PAINT SPECIFICATIONS (Continued)

The following documents of the issue in effect on the date of the invitation to quote form a part of this document to the extent specified herein:

Federal Standards: Number 141A and 141B paint, varnish, lacquer and related material: methods of inspection, sampling, and testing.

Military Standard: MIL-C 83486B Coating, Urethane, Aliphatic Isocyanates, for Aerospace applications.

Industry Methods and Standards: ASTM Method of Analysis (American Society for testing and Materials). BMS 10-72A (Boeing Material Specifications).

The entire exterior body structure (excluding roll-up doors) shall receive the primer coats and the finish coats. The apparatus body will be painted in a down draft type paint booth to reduce dust, dirt or impurities in the finish paint.

The painted surfaces shall have a finish with no runs, sags, craters, pinholes or other defects. The coating will meet the following test performance properties as a minimum standard.

DRIP RAILS

There shall be polished aluminum rain gutters installed on the side and rear of the body, the rain gutters shall be fastened to the body and removable in case of damage.

Rain gutters that are an integral part of the roof radius will not be acceptable due to the difficulty in replacing if damaged.

RUB RAILS

A two (2) part impact and rub rail system shall be used for body side protection. A polished aluminum rub rail .75" thick x 3" wide shall be bolted to the body "impact" rail to aid in collision protection.

The outside vertical edges shall be chamfered for an aesthetic appearance and to reduce the chance of personnel injury.

Black Scotchlite reflective striping to be applied to the recessed center of rub rail to provide additional body side illumination. An additional four (4) reflectors to be installed, two (2) each side of body.

WHEEL WELL LINERS

Bolted aluminum inner liners shall be provided at both rear wheel wells.

WHEEL WELL SURROUND PANELS – ALUMINUM DIAMOND PLATE

The body panels that surround the wheel wells shall be aluminum diamond plate.

FENDERETTES

The wheel well openings shall be trimmed with polished stainless steel fenderettes, bolted into place.

BULLDOG FIRE APPARATUS DEMO UNIT

SCBA BOTTLE COMPARTMENTS

SCBA storage compartments shall be installed in the wheel well area above the wheel well liners.

The storage compartments shall be made of a tube that interfaces with a spring loaded cast aluminum door and housing - fastened to the wheel well panel for a secure installation.

The inside of each compartment shall be lined with material (if required) to protect the air bottles from being damaged.

The storage compartments shall be installed in the apparatus at an inclined angle and incorporate a 1" nylon safety loop to be attached to the top of the bottle, to prevent the bottles from sliding forward when stored. There shall be holes drilled in the tubes for drainage in the event that water enters the compartment.

There shall be two (2) compartments in the right side wheel well panel.

BODY MOUNTING

The body shall be mounted to the chassis frame at not less than six (6) locations, three (3) on each side. The mounts shall secure the 1.0" x 3.0" 6061-T6 alloy solid aluminum flat-bar of the floor sub-frame to the chassis frame.

Neoprene pads shall be furnished and installed between the body and the mounts to prevent electrolysis and to minimize noise transfer.

BODY COMPARTMENT CONSTRUCTION

The body compartment shall be enclosed with .125" aluminum sheet. Each compartment floor shall be covered with .188" aluminum sheet for added weight carrying capability, with all seams fully sealed.

The body compartments shall be of a sweep-out design and include a stainless-steel door sill to protect the lower door opening area.

The door sill configuration shall have a raised peak to reduce water intrusion under the door when in the closed position.

Wiring channels shall be provided where necessary and shall be screwed in place for ease of access.

BODY COMPARTMENT COATING

All body compartments shall be fully coated with durable light gray splatter tone finish to aid in abrasion resistance.

BODY COMPARTMENT VENTING

Each compartment that extends below the chassis frame shall have a removable louvered vent panel with a replaceable filter.

BULLDOG FIRE APPARATUS DEMO UNIT

ADJUSTABLE SHELF CHANNEL

Vertically mounted Uni-Strut channel shall be provided and installed in all exterior compartments where necessary for the installation of infinitely adjustable shelving and trays.

The channels shall be of such design to allow square type spring loaded, self-tightening nuts to be attached inside of the channel.

ROLL-UP DOOR CONSTRUCTION, AMDOR

The compartments shall be equipped with custom-built Amdor roll-up doors.

Hanson International is an ISO-9001 certified company and the doors are manufactured in the United States. The door design has been tested to at least 100,000 cycles.

Each door shall have a serial number label and shall carry warranty of ten (10) years.

A 24-hour replacement part service program is available.

Door Construction-Smooth:

Each door shall be constructed of double walled and concave hard-anodized aluminum extrusion laths with a smooth exterior surface. The interlocking joint extrusion design shall have an integral synthetic spacer seal to reduce noise and prevent weather or debris intrusion in a closed position. Each door lath shall have inter-locking, nested, and replaceable polymer slide guides. Sides of the door openings shall be of hard anodized aluminum extruded guide channels.

Operating Components:

The easy opening doors shall be equipped with a 4" counterbalance spring in the roller assembly to assist in lifting and help prevent the accidental closing. A full width lift bar shall secure each door.

Door Handle and Latching-Handle Bar:

The latch bar shall consist of a full width .750" diameter stainless steel tube handle with centrally located knurled anti-slip sections and 1.25" hand clearance between handle and the door surface. The lift handlebar assembly shall have four (4) roller wheels to reduce friction and ease opening of door.

Compartment Lighting Switch:

The compartment lights and door-ajar light system shall be activated by an 8-amp rated magnetic switch assembly mounted to the right pennant plate at the top of the door roller area with a permanently installed magnet installed in the top lath. If the bar is not properly closed, it shall activate the "Door Open" light in the cab.

Weather Resistance:

The top door drip rail shall be a hard-anodized aluminum extrusion and shall contain a full width strip of weather seal to minimize water ingress along the top of the door. The top door seal shall be of a two (2) piece 'non-contacting design' to prevent damage to graphics, logos or reflective striping.

BULLDOG FIRE APPARATUS DEMO UNIT

ROLL-UP DOOR CONSTRUCTION, AMDOR (Continued)

Guide channel seals shall be replaceable and constructed of UV resistant rubber with automotive style flocking material for smoothness of operation.

The bottom of the door curtain shall have an additional full width UV resistant rubber seal.

NOTE: Door Finish-Satin: The roll-up doors shall be finished anodized Satin.

EXTERIOR COMPARTMENT SPECIFICATIONS

DRIVER'S SIDE

The front driver's side compartment, L1, shall have a clear opening of 54 5/8" H x 25" W x 21" D with a roll-up door.

The compartment over the rear wheels on the driver's side, L2, shall have a clear opening of 28 5/8" H x 42" W x 21" D with a roll-up door.

The driver's side compartment behind the rear wheels, L3, shall have a clear opening of 51 5/8" H x 33" W x 21" D with a roll-up door.

OFFICER'S SIDE

The front officer's side compartment, R1, shall have a clear opening of 54 5/8" H x 25" W x 21" D with a roll-up door.

The compartment over the rear wheels on the officer's side, R2, shall have a clear opening of 28 5/8" H x 42" W x 21" D with a roll-up door.

The officer's side compartment behind the rear wheels, R3, shall have a clear opening of 51 5/8" H x 33" W x 21" D with a roll-up door.

REAR

The rear compartment RR1, shall have a clear opening of 30 1/2" H x 42" W x 39-3/4" D with a roll-up door

COMPARTMENT L1 SHALL CONTAIN

ADJUSTABLE SHELVES

Two (2) adjustable shelves shall be fabricated and installed. Each shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides.

The shelves shall be vertically adjustable by mounting to the Uni-Strut channels provided.

BULLDOG FIRE APPARATUS DEMO UNIT

SLIDE OUT TRAY

A SlideMaster SM2-MP 70% extension slide out tray shall be provided and installed. The tray shall be constructed from 3/16" smooth aluminum and have a 3" lip on all four sides.

The tray shall have a capacity of 600-pounds and shall be mounted on SlideMaster steel slides.

An IMS push/pull red ball latch on the front of the slide shall lock the tray in the "in" or "out" position.

COMPARTMENT R1 SHALL CONTAIN

ADJUSTABLE SHELVES

Two (2) adjustable shelves shall be fabricated and installed. Each shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides.

The shelves shall be vertically adjustable by mounting to the Uni-Strut channels provided.

COMPARTMENT L2 SHALL CONTAIN

ADJUSTABLE SHELF

One (1) adjustable shelf shall be fabricated and installed. The shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides.

COMPARTMENT R2 SHALL CONTAIN

ADJUSTABLE SHELF

One (1) adjustable shelf shall be fabricated and installed. The shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides.

COMPARTMENT L3 SHALL CONTAIN

ADJUSTABLE SHELF

One (1) adjustable shelf shall be fabricated and installed. The shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides.

The shelf shall be vertically adjustable by mounting to the Uni-Strut channels provided.

COMPARTMENT R3 SHALL CONTAIN

ADJUSTABLE SHELF

One (1) adjustable shelf shall be fabricated and installed. The shelf shall be constructed of 3/16" DA finished aluminum, with a 2" lip on all four sides.

The shelf shall be vertically adjustable by mounting to the Uni-Strut channels provided.

BULLDOG FIRE APPARATUS DEMO UNIT

COMPARTMENT RR1 SHALL CONTAIN

SLIDE OUT TRAY

A SlideMaster SM2-MP 70% extension slide out tray shall be provided and installed. The tray shall be constructed from 3/16" smooth aluminum and have a 3" lip on all four sides.

The tray shall have a capacity of 600-pounds and shall be mounted on SlideMaster steel slides.

An IMS push/pull red ball latch on the front of the slide shall lock the tray in the "in" or "out" position.

PRO POLY POLYPRENE TANK (With Foam Cell)

A 300-gallon water tank with a 10 gallon foam cell shall be provided.

The tank shall be designed to utilize cavities that have commonly been wasted space. The tank shall extend up and over the rear center compartment to just behind the rear body wall. The tank shall fill the void between the main hose bed floor and the top of the rear center compartment.

This tank design shall provide for a lower overall tank height, resulting in a lower overall main hose bed height. In addition, this design shall create a lower center of gravity of the vehicle, for improved vehicle handling.

TANK CONSTRUCTION

The booster tank shall be constructed of .50-inch thick Polyprene sheet stock which is a non-corrosive stress relieved thermoplastic. It shall be designed to be completely independent of the body and compartments.

All joints and seams are extrusion welded and/or contain the "Bent Edge" and tested for maximum strength and integrity.

The top of the booster tank is fitted with lifting eyes designed with a 3 to 1 safety factor to facilitate tank removal.

COVER

The tank cover shall be constructed of .50-inch thick Polyprene and shall be recessed. A minimum of two lifting dowels shall be drilled and tapped .50-inch x 2.00 inch to accommodate the lifting eyes.

BAFFLES

The swash partitions shall be manufactured from .50-inch Polyprene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments to provide maximum water flow.

All swash partitions interlock and are welded to one another as well as to the walls of the tank.

BULLDOG FIRE APPARATUS DEMO UNIT

MOUNTING

The tank shall have a reinforced .75-inch floor for added strength and durability. The tank shall be isolated from the body substructure cross members with .50-inch x 2.50-inch rubber strips. The tank shall sit nested inside the center body substructure and shall be completely removable without disturbing the body side panels.

Tank stops on all four sides will keep the tank from shifting front to back or side to side.

FILL TOWER

The fill tower opening shall be approximately 13.00 inches x 12.00 inches.

The tower will have a .25-inch thick removable Polyprene screen and a Polyprene hinged type cover that will open if the tank is filled at an excess rate. There shall be a removable .25-inch thick Polyprene screen to prevent debris from falling into the tank.

The fill tower shall have a 4.00-inch overflow that will discharge underneath the tank, behind the rear axle(s), avoiding the chassis fuel tank and suspension components where applicable. The overflow shall terminate above the tank water level when filled to the rated capacity.

A second fill tower will be provided for the foam cell.

FILL TOWER LOCATIONS

The water and foam fill towers shall be located at the front of the hose bed.

SUMP

The sump will be constructed in an 8.00-inch x 16.00-inch x 3.00-inch-deep area.

The construction material shall utilize .50-inch Polyprene and be in line with the tank suction valve.

There shall be a 4.00-inch schedule 40 Polyprene tube installed that will run from the suction outlet to the sump location. The tank will have an anti-swirl plate located approximately 2.00 inch above the sump.

SUMP PLUG

The sump shall have a plug for use in draining and cleaning out the tank.

OUTLETS

In addition to the tank suction valve outlet located in the sump, there shall be an outlet provided for the tank fill valve.

If there are any additional options selected (such as an extra tank suction or direct tank inlets), there shall be additional outlets provided to accommodate these items.

BULLDOG FIRE APPARATUS DEMO UNIT

UPPER HOSE BED

Hose bed located full length and width of upper center section of apparatus between side compartments walls. Hose bed supporting structure of 2.0" x 2.0" x .125" 6063-T52 alloy square aluminum tubing.

The Floor of NFPA non-slip aluminum, minimum .188" aluminum.

HOSE BED PARTITION

There shall be one (1) .188" aluminum reinforced, fully adjustable hose bed partition. The partition shall be adjustable by usage of spring-loaded cam lock fasteners.

The partition shall have an oval hand hold cut-out at the rear of the partition to aid personnel in accessing the hose bed area.

VINYL HOSE BED COVER

A reinforced vinyl hose bed cover shall be provided over the upper hose bed storage area. This cover shall be reinforced at all four edges and shall be retained on the front, left side, and right-side walls with stainless steel twist lock fasteners.

There shall be a rear flap extending from the rear of the hose bed cover to secure hose at the rear opening of the hose bed.

This flap shall have a minimum of five (5) sewn-in bungee cord retaining loops with stainless steel hook retainers.

BODY HANDRAILS

Two (2) handrails shall be provided at the rear of the apparatus body. Each will be 1 1/4" extruded aluminum Hansen non-rotating knurled tubing with chrome plated end stanchions. To also include stanchion to body gaskets to prevent dissimilar metal corrosion.

Each stanchion shall be bolted into place for ease of removal or replacement.

FUEL FILL DOOR

A flush mounted fuel filler guard with a hinged door shall be installed over the fuel fill ports.

The door shall be a Cast Products Incorporated or similar. The door shall have a label for FUEL FILL. The labels shall be a product of Innovative Concepts Inc.

Additionally, DIESEL FUEL ONLY engraved plates shall be installed inside the door on a permanently attached label above or near each fill site.

ELECTRICAL SYSTEM - BASE

All wiring and electrical equipment to be compliant with any applicable NFPA 1901 criteria for Special Service Fire Apparatus and SAE standards. All lighting and reflectors shall meet Federal Motor Vehicle Standards. A master warning device switch that energizes all optical warning devices shall be provided.

BULLDOG FIRE APPARATUS DEMO UNIT

ELECTRICAL SYSTEM – BASE (Continued)

The warning system on the 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.

Switching to sense the position of the park position of an automatic transmission. When the master warning system switch is closed, and the parking brake released or the automatic transmission is not in park, the warning devices signaling the call for right of way shall be energized.

When the master optical warning system switch is closed, and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of right of way shall be energized. The system shall be permitted to have a method of modifying the two signaling modes.

The warning devices shall be constructed or arranged to avoid the projection of light either directly or through mirrors into any driving or crew compartment(s).

Electromagnetic interference suppression shall be in accordance with SAE J551, performance levels and methods of measurement of electromagnetic radiation from vehicles and devices (30-1000 MHZ).

Wiring grommets shall be provided through all panels for automotive type wiring with coated automotive type loom. Insulation shall be in accordance with SAE J1128, low tension primary cable, type SXL or GXL, and wired to SAE J1292, Automobile, Truck, Truck-Tractor, Trailer and Motor Coach wiring for such loading at the potential employed. All wiring installed by the Apparatus

Manufacturer shall be stranded copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected.

Voltage drops in all wiring from the power source to the using device shall not exceed 10 percent. Wiring shall be color and function coded the entire length with insulated bolted-down type hold-down clamps and mechanically secured connections.

Overall covering of conductors shall be 280 degrees F. Minimum flame retardant, moisture resistant loom.

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 metal protective looms 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. Such devices shall be readily accessible and protected against excessive heat, damage and water spray.

BULLDOG FIRE APPARATUS DEMO UNIT

ELECTRICAL SYSTEM – BASE (Continued)

Switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. All electrical components shall be protected against corrosion, heat, vibration and moisture.

There shall be a minimum of two (2) spare wires installed in each loom running to the body of the vehicle.

ELECTRICAL SYSTEM

There shall be a Safe Fleet SAFE-LINK Multiplexed Electrical System installed. The multiplex system shall consist of all solid-state components contained inside a box referred to as nodes.

All inputs and outputs shall be configured into a scale-able electrical harness utilizing Deutsche connectors. The nodes must be waterproof and not require special mounting requirements.

The system is expandable and shall be capable of performing the following functions: load management sequencing, switch loads and receive digital and analog signals.

The placement of nodes throughout the apparatus enables a reduction in wire harness bundles, elimination of redundant harnesses and separate circuit boards, relay and circuit breakers, electrical hardware, separate electrical or interlock subsystems and associated electronics for controlling various electrical loads and inputs.

The complete multiplex system shall eliminate the need for the following separate components or devices: load manager, load sequencer, warning lamp flasher, headlamp flasher, door open notification system, interlock modules, separate voltmeter, ammeter and temperature monitor.

In an application where the siren controller is unable to provide the necessary switching then Carling rocker type switches with function labels shall be provided if needed and installed on the center console.

POWER DISTRIBUTION QUARTERS

The vehicle shall be equipped with a Power Distribution Quarters (PDQ) to provide a protected environment for the electrical systems interface to the apparatus body. The PDQ shall have a service access door that is removable via two (2) recessed positive type door latches.

12v lighting shall automatically activate with the removal of the access door. The compartment and access door shall be fabricated from 5052-H32 aluminum alloy, finished to match with interior compartments, and include venting for heat dissipation.

The design shall provide a standardized platform for reliable and repeatable hard-wired or multiplexed electrical systems that can be documented and easily serviced and maintained.

The internal wiring terminals shall be machine or torque-tool crimped to the wire ends and splices shall be protected with heat shrink material.

All body harnesses entering and exiting the distribution panel shall pass through a protected wiring channel directly into the PDQ.

BULLDOG FIRE APPARATUS DEMO UNIT

POWER DISTRIBUTION QUARTERS (Continued)

The electrical distribution panel shall incorporate wiring harnesses that meet or exceed NFPA standards while providing a central location for body wiring harnesses.

The distribution panel, including all circuits, shall be documented and made part of the records available at time of delivery.

BATTERY CHARGER

A Kussmaul Auto Charge Low Profile LPC 20 Series Model #091-207-12-194B shall be installed for a single battery system. The charger shall include a status display mounted on the cab console.

Charger to be built in an aluminum enclosure and include an auxiliary 15-amp output circuit with power source selector for operating accessory loads, and front panel connections for a remote display.

Charger output shall pose no interference with other electronic systems on the vehicle.

KUSSMAUL 120-VOLT SUPER AUTO EJECT

Kussmaul Super Auto Eject, model 091-55-20-120-BW, 20-amp, automatic shoreline disconnect will be provided for the on board, 120-volt battery charging system.

The disconnect will be equipped with a NEMA 5-20P male receptacle, which will automatically eject the shoreline when the vehicle starter is energized.

COMPARTMENT STRIP LIGHTING, HANSEN

Hansen International "Brilliant White" LED modular compartment lighting shall be installed all compartments to provide even, full height lighting for the compartment without interference from shelves or equipment.

A protected strip to be installed on both sides of the opening and shall run the full height of the compartment. Lights shall be activated by a magnet switch when opening the compartment door.

This lighting system to employ 12V D.C. solid state operation with 24" connective pigtail, 120 lumens per foot, rated at 50,000 hours, waterproof to IP66 rating, and be shock and vibration resistant. Lighting shall snap-in for easy installation and service, if necessary, be manufactured in the USA, exceed NFPA 1901 current edition, and be white in color.

ELECTRONIC SIREN

A Whelen Siren Amplifier model # 295SL101 shall be provided and installed in the cab console. Siren shall include functions: wail, yelp, manual, hands-free, piercer tones, PA and radio-rebroadcast. The siren shall have the ability to drive 100 or 200-watt output. Control to be backlit with soft LED non-glare green lighting.

The operating controls will consist of a power switch, manual button, PA volume switch, horn button, rotary switch, and removable microphone. Amplifier to include a 20A/32V fuse.

BULLDOG FIRE APPARATUS DEMO UNIT

SPEAKER SYSTEM

There shall be one (1) Whelen SA315P siren speaker recessed into or behind the front bumper. The 100-watt Speaker shall be wired to the siren head.

FRONT LIGHT BAR

Whelen Edge Ultra Freedom F4N0VLED LED NFPA light bar shall be provided and installed on the vehicle.

The light bar shall be 60" long and include:

Two (2) front corner RED, four (4) front linear, two (2) RED and two (2) WHITE, two (2) rear corner RED.

FRONT LOWER WARNING LIGHTS

There shall be Whelen M2RC series Super LED lights with chrome bezels installed.

Two (2) warning lights shall be mounted in the grille.

The warning lights shall be red LED's with clear lenses.

SIDE UPPER WARNING LIGHTS

There shall be Whelen M7RC series Super LED upper warning lights with chrome bezels installed.

Two (2) warning lights shall be mounted on the left upper body panel.

Two (2) warning lights shall be mounted on the right upper body panel.

The warning lights shall be red LED's with clear lenses.

SIDE LOWER WARNING LIGHTS

There shall be Whelen M2RC series Super LED lower warning lights with chrome bezels installed on the vehicle.

Two (2) lights installed, one (1) on each front fender of the chassis.

Two (2) lights installed, one (1) above each rear wheel well.

Two (2) lights installed, one (1) at each side of bumper tail.

The warning lights shall be red LED's with clear lenses.

REAR UPPER WARNING LIGHTS

There shall be Whelen M7RC series Super LED rear upper warning lights with chrome bezels installed.

Two (2) lights shall be mounted, one (1) in each upper rear corner.

The warning lights shall be red LED's with clear lenses.

BULLDOG FIRE APPARATUS DEMO UNIT

UPPER BODY SCENE LIGHTS

There shall be Whelen M7 LED series clear scene lights installed.

Two (2) lights shall be mounted with chrome bezels on the upper street side of the body.

Two (2) lights shall be mounted with chrome bezels on the upper curb side of the body.

The scene lights shall be controlled in pairs at the cab console.

REAR BODY SCENE LIGHTS

There shall be Whelen M7 LED series clear scene lights installed.

Two (2) lights shall be mounted with chrome bezels on the rear upper body.

The scene lights shall be controlled in pairs at the cab console.

REVERSE ACTIVATED REAR SCENE LIGHTS

The rear scene lights to automatically activate whenever the apparatus transmission is in reverse mode.

REAR D.O.T. QUAD CLUSTER W/WARNING LIGHT

A four (4) light vertical cluster with chrome bezel shall be mounted on the rear of the body, one (1) each side. The cluster will utilize Whelen M6 series LED lights:

Model #M6BTT LED red combination stop/taillight.

Model #M6T LED amber turn signal.

Model #M6BUW LED white back-up light.

Model #M6RC LED red warning light.

REAR DIRECTIONAL LIGHTBAR

There shall be a Whelen model #TAL85 46.82 inch long directional lightbar with eight (8) amber 500 series LED light heads provided and installed on the apparatus.

The traffic advisor shall include model TACTL5 control head that includes remote flash control.

The lightbar control head shall be mounted in the center cab console.

A .125 inch aluminum diamond plate light shield shall be installed directly above the rear directional light bar to protect the light bar from accidental damaged during hose loading and unloading operations.

This light shield shall not be used as a stepping surface.

BULLDOG FIRE APPARATUS DEMO UNIT

LED CLEARANCE LIGHTS

Nine (9) Weldon 1500 Series LED Low Amp Draw Marker Lamps, seven (7) Red (Model #9186-1500-10) and two (2) Amber (Model #9186-1500-20), with stainless steel brush guards (Model #0J10-1200-00) shall be installed to meet ICC, FMVSS and other applicable regulations.

LED UNDERBODY LIGHTS

There shall be eight (8) TecNiq Series E10-WS00-1 LED underbody lights mounted on stainless steel brackets.

Two (2) under the chassis cab bumper, one (1) each side.

Two (2) under the front body compartments, one (1) each side.

Two (2) under the rear body compartments, one (1) each side.

Two (2) under the rear bumper, one (1) each side.

The lights shall be activated when the transmission is placed in Park and the Marker lights are on.

STEP LIGHTS

Two (2), Technique LED step lights shall be provided at the rear of the apparatus body. The lights shall be located above the rear step.

The step lights shall be activated when the chassis transmission is placed in the "PARK" position.

LICENSE PLATE BRACKET WITH LIGHT

There shall be a license plate bracket with light supplied and mounted at the rear of the apparatus.

FIRE RESEARCH TELESCOPIC LED SCENE LIGHTS

Fire Research Spectra LED Scene Light model SPA510-Q20 top mount, top raise telescopic light shall be provided on the apparatus.

The light pole shall be anodized aluminum and have a knurled twist lock mechanism to secure the extension pole in position. The extension pole shall extend 4 feet and rotate 360 degrees. A 3.50 inch round mounting flange shall be provided.

The lamp head shall have eighty four (84) ultra-bright white LEDs, 72 for flood lighting and 12 to provide a spotlight beam pattern.

It shall operate at 12/24 volts DC, draw 18/9 amps, and generate 20,000 lumens of light. The lamp head shall have a unique lens that directs flood lighting onto the work area and focuses the spotlight beam into the distance. The lamp head angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob.

BULLDOG FIRE APPARATUS DEMO UNIT

FIRE RESEARCH TELESCOPIC LED SCENE LIGHTS (Continued)

The lamp head shall be no more than 5.375 inches high by 14.00 inches wide by 3.75 inches deep and have a heat resistant handle. The lamp head and mounting arm shall be powder coated. The LED scene light shall be for fire service use.

The flood/spotlights shall be controlled by a single switch mounted and labeled in the cab console.

The floodlights shall be installed at the pump panel to the rear of the crossways.

FOLDING STEPS

Four (4) Cast Products, Inc. model #SP6610-1CH dual LED illuminated folding steps, made of high strength die cast aluminum with a protective chromed coating, pyramid tread platform, conforming to current NFPA requirements, shall be provided and installed on the apparatus as specified.

The steps shall have a minimum of 46 sq. inches of surface area capable of sustaining a 1200 lb. static load. The steps shall be mounted no more than 18" inches between each step.

Installed at the rear of the apparatus body.

REAR STEP AND BUMPER

The rear bumper and step assembly shall extend full width of the body. The bumper structure shall be attached to the chassis frame rails using a minimum of 3" structural channel.

The bumper and step assembly shall extend beyond the rear of the modular body a minimum twelve inches (12") to protect the body from damage.

The rear step shall be constructed of 1/8" embossed aluminum tread plate material.

REAR TRAILER HITCH

TRAILER HITCH CLASS IV

The apparatus shall be equipped with a receiver hitch installed at the rear of the apparatus mounted directly to the chassis frame rails and below the apparatus in the center.

The receiver shall be classified as a Class IV receiver hitch with a 2.50-inch hitch box opening.

The maximum towing capacity shall be 7500 pounds (3400 kg) with a tongue weight of 750 pounds (340 kg) or 12000 pounds (5443 kg) towing capacity with an approved distributed trailer load.

TRAILER LIGHT CONNECTOR

A weather-proof covered combination 7-pin/4-pin trailer plug connector wired to the taillights shall be installed.

BULLDOG FIRE APPARATUS DEMO UNIT

TOW EYES - REAR

There shall be two (2) tow eyes mounted directly to the chassis rear bumper framework.

MUD FLAPS - REAR

There shall be black rubber mud flaps installed for the rear wheels.

EXTENSION LADDER

A 12', two (2) section, aluminum, Duo-Safety, Series 1000-A extension ladder shall be provided.

LADDER STORAGE

There shall be one (1) storage area for the ladder(s) and shall be mounted in an aluminum treadplate trough on the top of the on the top right-side compartments.

The trough shall be constructed from aluminum treadplate and the bottom of the trough where the ladder rails ride shall be lined with a smooth nylon or poly material to protect the ladder rails and aid in the removal and installation of the ladder.

Nylon straps with quick release clips or Velcro at the rear shall retain the ladders within the trough. The ladders shall be banked together if more than one ladder is to be carried.

SUCTION HOSE STORAGE TRAYS

Suction hose shall be stored on a formed aluminum trough sized to hold 6.00-inch x 10.00-foot hose. The trough shall have two (2) Velcro hold-down straps, one (1) at each end, which shall secure the suction hose to the tray.

Two (2) troughs shall be mounted to the top left side catwalk above the left side compartments.

There shall be two (2) 10-foot lengths of 6.00 inch clear PVC suction hose with lightweight couplings provided with the above specified storage.

WARNING LABELS AND INFORMATION PLATES

All operator controls and switches shall have the appropriate label and corresponding bezel such as pump discharge controls, electrical connections, fuel/DEF fill and exterior switches, etc.

BULLDOG FIRE APPARATUS DEMO UNIT

REAR RETRO-REFLECTIVE CHEVRON STRIPING

A minimum of 50 percent of the rear-facing vertical surface, visible from the rear of the apparatus, shall be equipped with Diamond Grade, retro-reflective striping in a chevron pattern, sloping downward and away from the centerline of the vehicle at an angle of 45-degrees.

The stripe shall be 6.00 inches (152.40 mm) wide alternating in colors in compliance with (NFPA) 1901, Standard for Automotive Fire Apparatus.