

**NOTICE TO BIDDERS  
PUMPER TRUCK**

Notice is hereby given that the Board of County Commissioners of Santa Rosa County, Florida, will receive sealed bids for one Pumper Truck.

All bids must be original and delivered by hand, Fed Ex, or mail to the Office of the Santa Rosa County Procurement Department, 6495 Caroline Street, Suite G, Milton, Florida, 32570; and must be received by 10:00 a.m., May 13, 2008, at which time bids will be opened and read aloud. Bids received after the time set for the bid opening will be rejected and returned unopened to the bidder. All interested parties are invited to attend.

Specifications and bid form may be secured from Santa Rosa County Website ([www.santarosa.fl.gov/bids](http://www.santarosa.fl.gov/bids)) or at the Santa Rosa County Procurement Department at the above address. Telephone (850) 983-1833.

Questions concerning this request should be directed to Mr. Brad Baker at (850) 983-4610.

The Board of County Commissioners reserves the right to waive irregularities in bids, to reject any or all bids with or without cause, and to award the bid that it determines to be in the best interest of Santa Rosa County.

Santa Rosa County does not discriminate on the basis of race, color, national origin, sex, religion, age, or handicapped status in employment or provision of service.

By order of the Board of County Commissioners of Santa Rosa County, Florida.

**LEGAL NOTICE**

One issue – April 12, 2008 - Press Gazette, and April 17, 2008 - Navarre Press

Bill and proof to Santa Rosa County Procurement Department, 6495 Caroline Street, Suite G, Milton, Florida, 32570, Attn.: Orrin L. Smith.

April 12, 2008

**MEMORANDUM**

TO: Company Addressed

FROM: Santa Rosa County Procurement Department

SUBJECT: Pumper Truck

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# **MINIMUM SPECIFICATIONS PUMPER TRUCK**

## **General Instructions**

The fire apparatus and equipment to be furnished in meeting these specifications shall be the product of an established, reputable fire apparatus manufacturer. Each bidder shall furnish satisfactory evidence of the manufacturer's ability to construct, supply service parts and provide technical assistance for the apparatus specified. The bidder must state the location of the factory and the location of the service center as well as the availability of on-site service. Each bidder shall provide a list of equivalent type trucks of the specified design sold and in service by the manufacturer in this state.

The intent of these specifications is to describe the minimum quality level acceptable. Any brand name and/or model number mentioned is intended to be descriptive and not restrictive to bidders who cannot provide those brands. Each bidder must state the brand of any item which is not available to the bidder along with a complete description of the substituted item. The buyer reserves the right to require a bidder to provide proof in each case that a substituted item is equal to the item specified. The buyer shall be the sole judge in determination of acceptable substitutes and that decision shall be final.

## **Standards Compliance**

The apparatus shall conform to the National Fire Protection Association Standards 1901, 1914 and 1071, in their most recent edition, as applicable to the specified vehicle, unless otherwise specified in this document.

## **Bid Submission**

The bidder shall submit detailed specifications on each item. The bidder shall furnish detailed standard engineered drawings of compartmentalization of the vehicle. Additional information as to the materials, design, and performance of the product proposed shall be submitted for evaluation by the buyer.

Bids shall be addressed and submitted in accordance with the instructions provided on the bid advertisement cover sheet. The bid shall be sealed and clearly labeled with "Bid – Regular Pumper Truck", the date, and time of the bid opening.

Only the specified firefighting and support equipment listed in these specifications shall be provided. Any additional equipment required for standards compliance shall be provided by the buyer after delivery.

The equipment proposed in response to this Invitation shall be new, unused, and shall be of the latest model and type unless otherwise specified. No prototype apparatus will be considered.

The buyer reserves the right to initiate and/or consider negotiations in construction which will be in the best interest of the fire department once the bid has been awarded. Such negotiations will be subject to approval by the buying authority.

Submit only one bid which meets or exceeds the specifications. Bids which option price or omit items required by the specifications in order to appear low bid will be rejected without consideration. Bids on alternate, stock or demonstrator units which do not meet these specifications are not being solicited. Any such bids will not be considered.

The purchaser will utilize the detailed specifications provided to compare the unit proposed with the specifications. All documentation is requested to be submitted in the same sequence as the advertised specifications for ease of comparison.

Any bidder who fails to submit a detailed construction specification or who photocopies and submits these specifications as their own construction details will be considered non responsive, and such proposals shall be ineligible for award.

Any erasures, strike-overs, and/or changes to prices written in numerals should be initialed by the bidder. Failure to initial changes may be cause for rejection of the bid as irregular.

All bids must be signed. The buyer will not accept a bid which has not been signed by a representative of the bidder.

Bidders shall be responsible for prompt arrival of the bid at the location designated in the specifications. Late bids, telegrams, FAX, or telephone bids will not be considered.

### **Evaluation Standards**

The buyer will be the sole judge in determining compliance with the specifications and this decision shall be final. The purchaser reserves the right to reject any or all bid proposals, and to purchase the equipment it deems most suitable to its needs. The purchase shall not be obligated to accept the lowest or any bid.

In order to provide assurance of the quality of the vehicle, the manufacturer shall operate a Quality Management System under the requirements of ISO 9001. These standards sponsored by the "International Organization for Standardization (ISO)" specify the quality systems that shall be established by the manufacturer for design, manufacture, and service of products. A copy of the manufacturer's certificate of compliance shall be included with the bid.

The buyer reserves the right to use the following criteria in the evaluation and award process:

- Specification Compliance
- Mobile In-Department Service Capability
- Ability to provide complete Warranty Service
- Certification Level of Service Technicians
- Delivery Time
- Past Performance of the bidder and manufacturer
- Reputation of the Bidder with other buyers in the area
- Buyer Protection

The manufacturer who states compliance, but does not comply with the minimum specifications shall be liable to pay the balance (if any) to the buyer so that they may receive the unit specified.

The successful contractor shall defend any and all legal suits and assume all liability for any and all claims made against the purchaser and/or any of its officials or agents for the use of any patented process, device, or article forming a part of the apparatus or any other appliance furnished under the contract.

Each manufacturer shall provide with the bid an original certificate of liability insurance protection in the amount of \$25,000,000.00 with the buyer listed as certificate holder. This amount has been determined as an average which should not be restrictive to any acceptable builder of fire apparatus. Failure to comply with the liability insurance protection requirements of the bid will render the manufacturer and unacceptable vendor for this class of vehicle.

### **Warranties**

This specification makes reference to various warranties which are the minimum acceptable in each case. Each bidder shall include reference which acknowledges each warranty. Bidders must include copies of each warranty that is provided directly by the apparatus manufacturer.

### **Delivery**

Each bidder shall state the estimated delivery time in calendar days. The buyer may elect to award the contract based on delivery as well as price and conformance with the specifications. The successful bidder shall not be responsible for delays in delivery due to strikes, acts of God, failure of suppliers to deliver, chassis shortage and other reasons beyond the reasonable control of the builder. Where conditions that could affect delivery are known at the time of the bid, the buyer shall state such conditions.

Should the bidder be unable to comply with the proposed delivery date, the purchasing director shall be notified immediately with the reasons for non-compliance. Failure to meet the stated delivery may constitute a breach of contract.

Bids submitted shall include prepaid delivery. The vehicle shall be delivered under its own power. Rail or freight shipment will not be acceptable. A factory trained representative shall deliver the unit, unless factory acceptance and instruction is preferred. The representative shall be prepared to familiarize the department personnel with the operations and maintenance of the apparatus.

The responsibility for the apparatus and equipment remains with the manufacturer until satisfactory completion of the acceptance test and the formal acceptance of the apparatus is made.

### **Prepayments**

No bid will be considered which requires the buyer to deposit with the bidder a down payment, prepayment of chassis, or any other such consideration as a condition of the bid. Such a requirement shall be grounds for rejection of the bid.

### **Exceptions**

These specifications are not meant to eliminate any qualified bidder, but are stated to establish the minimum acceptable quality level that will be accepted. Exceptions may be submitted where the

item specified is not available to a manufacturer. Each bidder shall list exceptions on a page entitled "Exceptions to Specifications" and shall include complete descriptions of the substituted item. This page shall be attached to the bid. Exceptions shall concisely describe the item noted for exception and state the item being provided. If there are no exceptions to the specifications listed, it shall be assumed that the buyer will find no deviations between the advertised specifications and the proposal submitted. Numerous, extensive, vague or confusing exceptions to specifications could result in rejection of the bid.

The buyer will closely compare each bid submitted with the advertised specifications in order to determine the level of compliance of each bid. All bidders are hereby advised that proposals that are found to have deviations without proper exceptions will be rejected. Proposal taking general or total exception are not being solicited.

The apparatus will be inspected upon delivery for compliance with the specifications. Deviations will not be tolerated and will be cause for rejection of the apparatus unless these deviations were originally listed and approved by the buyer as part of the contract.

Minor details of construction and materials, where not otherwise specified, are left to the discretion of the contractor who shall be solely responsible for the design and construction of these features.

### **Bonding**

A bid bond in the amount of 5% of the total bid shall accompany the bid. Bids submitted without a bid bond will not be read. Bonds must be signed by an officer of the bidder's company. A performance bond will be required of the successful bidder in the amount of 20% of the contract price to guarantee delivery in the time frame provided on the bid form.

### **Single Source**

In order to protect the purchaser from divided warranty responsibilities between the chassis and body manufacturer, proposals will only be accepted from apparatus builders who design, fabricate, manufacture, and assemble the complete apparatus at their own facilities. This shall include the cab shell, chassis assembly and complete body structure. Private labeling of another manufacturer's chassis or cab will not meet the requirements of this provision.

### **Engine Certification**

It is the intention of the purchaser to acquire apparatus of a proven design that will meet the installation requirements of the engine and transmission manufacturers. Therefore, each bidder shall submit, with their proposal, a copy of the engine and transmission installation approval. This approval shall be submitted for the exact configuration of power train components as specified in these bid documents. This configuration shall include the same cab, engine, transmission, cooling system, and other such items.

The engine installation shall not require the operation of any type of "power down" feature in order to meet these tests. Failure to submit these cooling certifications or the submitting of certifications not pertaining to the particular configuration of the apparatus specified will result in rejection of the apparatus proposal.

## **Certification**

The bidder shall furnish a third party testing labs Certificate of Approval for the systems as required by the specifications.

## **Service Capability**

As "the entity having jurisdiction" as defined by NFPA 1071, the buyer requires that all bidders be capable of providing both in-house and on-site service for the apparatus proposed through the use of either an established emergency vehicle service center or a mobile technician. The bidder shall have full time EVT certified maintenance technicians in compliance with NFPA 1071 classifications F-2 through F-6 on staff to provide service. On-site service shall be the primary mode of maintenance and warranty repair to eliminate the requirement of transporting the vehicle outside the fire department jurisdiction. Each bidder shall include copies of the mechanics EVT certification listing their classes of certification with the bid as proof of meeting this requirement.

## **Aluminum Body Construction**

As all material and equipment specified herein are available to all builders, aluminum type apparatus are being solicited. Steel bodied type apparatus are not being called for and will not be considered. The entire apparatus body, including the sub frame, shall be constructed of aluminum to eliminate the chance of rust on these components.

The apparatus body shall be of the all-aluminum modular type, and shall be completely assembled prior to installation on the chassis.

Special consideration will be given to the accessibility of various components requiring periodic maintenance operations, ease of operation, and symmetrical proportions.

The body shall be completely built, painted, and installed by the prime apparatus manufacturer in order to minimize third party involvement on engineering, design, service, and warranty questions. Apparatus using a subcontracted body will not be acceptable.

## **Authority of Specifications**

These specifications, together with any other documents required herein, shall be included in the final contract for a vehicle.

All design, operational and material features shall fully comply with State and Federal Motor Vehicle Standards as stated in Public Law Number 90-563.

## **Manufacturer History**

A written review of the company, in chronological order, detailing the background of the manufacturer shall be provided as part of the bid.

## **Bumper**

The vehicle shall be equipped with a one-piece 10" high bumper, made from 10-gauge (0.135" nominal) polished stainless steel for corrosion resistance, strength, and long-lasting appearance. It shall be mounted directly to the front frame extensions for maximum strength. The bumper shall incorporate two stiffening ribs.

There shall be a bumper extension approximately 20" from the face of the cab as required.

The extended front bumper gravel shield shall be made of 1/8" aluminum tread plate material.

## **Bumper Tray**

A hose tray constructed of 1/8" aluminum shall be recessed into the front bumper extension. The tray shall be located in the center of the bumper and be approximately 12" deep (11" to the top of the slats). One inch thick aluminum slats shall be included in the bottom of the hose tray to aid in the dissipation of water from the tray.

The center bumper tray shall have a diamond plate lid. The lid shall be hinged and shall be secured in the closed position by a latch and held open with a pneumatic shock.

## **Rear Underbody Support Frame**

The body shall be supported at the rear by a steel frame extension bolted to the chassis frame rails. The frame rails and frame extension shall be isolated from the aluminum body extrusions by 5/16" x 2" fiber reinforced rubber.

The frame extension shall be built with two 2.5" sq. x .25 wall thickness x. full width cross rails welded to two 2.5" sq. x .25 wall thickness side rails. The frame extension assembly will be welded to steel weldments, which are secured to the chassis frame with grade 8 5/8" bolts.

The frame extension shall not interfere with N.F.P.A. minimum requirements for angle of departure.

## **Frame Assembly**

The frame assembly shall be for use with a 202" wheelbase with and 47" after frame.

The frame shall consist of two C-channel frame rails with heavy-duty fabricated cross members. The frame shall be bolted together using high-strength Grade 8 threaded fasteners for durability and ease of repair.

Each frame rail shall have the following minimum specifications in order to minimize frame deflection under load and thereby improve vehicle ride and extend the life of the frame:

Dimensions: Frame rail - 10-1/4" x 3-1/2" x 3/8" straight frame rails (non-tapered)

Material: Frame rail - 110,000-psi minimum yield strength, high strength, low alloy steel

Section Modulus: 16.6 cu. in.

(RBM): 1,827,045-in. lbs.



If larger rails are provided, the maximum height of each frame rail shall not exceed the 10-1/4" dimension by more than 1/2" in order to ensure the lowest possible body height for ease of access as well as the lowest possible vehicle center of gravity for maximum stability.

There shall be a minimum of eight cross members joining the two frame rails/frame liners in order to make the frame rigid and hold the rails/liners in alignment. Six of the cross members shall be a steel C-channel design bolted back-to-back in pairs to form three heavy-duty cross members located at points of critical stress -- one near the back of cab supports, one at the forward bracket of the rear suspension, and one at the rear bracket of the rear suspension. The three heavy-duty cross members shall be attached to the frame rail with not less than six bolts at each end arranged in a bolt pattern that is not less than 8.8" apart in the fore-aft direction in order to adequately distribute the cross member load into the rail/liner and minimize stress concentrations.

All frame fasteners shall be high-strength, Grade 8, flanged-head threaded bolts and nuts for frame strength, durability, and ease of repair. The nuts shall be Stover locknuts to help prevent loosening. The frame fasteners shall be tightened to the proper torque at the time of assembly.

The frame rails shall be finished with a corrosion-inhibiting black powder coat. The frame cross members and frame-mounted components (suspensions, axles, air tanks, battery boxes, fuel tank, etc.) shall be painted black.

### **Front Axle**

The vehicle shall utilize an ArvinMeritor FL-941 front axle with a rated capacity of 18,000 lbs. It shall have "easy steer" knuckle pin bushings and 68.5" kingpin centers. The axle shall be of I-beam construction and utilize grease-lubricated wheel bearings. The vehicle shall have a nominal cramp angle of 45 degrees.

The front axle hubs shall be made from ductile iron and shall be designed for use with ten hole hub-piloted wheels in order to improve wheel centering and extend tire life.

The front springs shall be parabolic tapered, minimum 4" wide x 54" long (flat), minimum three leaf, progressive rate with bronze bushings and a capacity of 18,000 lbs. at the ground.

Tapered leaf springs provide a 20% ride improvement over standard straight spring systems. Supporting documentation/data shall be provided upon request.

The vehicle shall be equipped with a Sheppard model M-110 integral power steering gear used in conjunction with a model 292 slave gear or a power assist cylinder depending on application. The steering assembly shall be rated to statically steer a maximum front axle load of 18,000 lbs. Relief stops shall be provided to reduce system pressure upon full wheel cut. The system shall operate mechanically should the hydraulic system fail.

A 2-year/unlimited miles parts and 2-year labor axle warranty shall be provided as standard by ArvinMeritor Automotive.

In order to achieve maximum vehicle road performance and to promote long tire life, there shall be a wheel alignment. The alignment shall conform to the manufacturer's internal specifications. All

wheel lug nuts and axle U-bolt retainer nuts shall be tightened to the proper torque at the time of alignment. The wheel alignment documentation shall be made available at delivery.

### **Front Shock Absorbers**

The front suspension shall be furnished with two heavy-duty, double acting shock absorbers, one on each side.

### **Rear Axle**

The vehicle shall be equipped with an ArvinMeritor RS-25-160 single rear axle with single-reduction hypoid gearing and a manufacturer's rated capacity of 27,000 lbs. The axle shall be equipped with oil-lubricated wheel bearings with ArvinMeritor oil seals.

The rear axle hubs shall be made from ductile iron and shall be designed for use with ten hole hub-piloted wheels to improve wheel centering and extend tire life.

A two year/unlimited miles parts and two year labor rear axle warranty shall be provided as standard by ArvinMeritor Automotive.

### **Rear Suspension**

The rear suspension shall be a pair of variable-rate leaf springs with auxiliary ("helper") leaf springs and bronze bushings. The variable-rate springs with auxiliary springs ensure that the vehicle rides and handles smoothly under both loaded and unloaded conditions. The suspension shall be rated for the maximum axle capacity.

### **Front Rims**

The vehicle shall have two polished aluminum disc wheels. They shall be forged from one piece corrosion-resistant aluminum alloy and sized appropriately for the tires. Set of Stainless Steel Axle Shaft and Lug Nut Covers shall be included for front axles.

### **Rear Wheels**

The vehicle shall have four polished aluminum disc wheels. They shall be forged from one-piece corrosion-resistant aluminum alloy and sized appropriately for the tires. Set of Stainless Steel Axle Shaft and Lug Nut Covers shall be included for rear axles.

### **Front Tires**

Front tires shall be two Michelin 315/80R 22.5 tubeless type 20 PR radial tires with XZA-1 highway tread.

Tires with wheels shall have the following weight capacity and speed rating:

18,000 lb. @ 75 mph

The tires and wheels shall conform to the Tire and Rim Association requirements.

### **Rear Tires**

The rear tires shall be four Michelin 12R22.5 tubeless type 16 PR (Ply Rating) radial tires with XZE

highway tread.

The tires with wheels shall have the following maximum weight and speed capacity:

27,000 lbs. (dual) @ 75 MPH.

The tires and wheels shall conform to the Tire and Rim Association requirements.

### **Front Brakes**

The front axle shall be equipped with Meritor DiscPlus EX225 17 inch disc brakes.

The brakes shall be covered by the manufacturer's standard warranty which is three years, unlimited mileage and parts only.

### **Rear Brakes**

The rear axle shall be equipped with Meritor Disc Plus EX225 17 inch disc brakes with a maximum rated capacity of 27,000lbs.

The brakes shall be covered by the manufacturer's standard warranty which is three years, unlimited mileage and parts only.

### **Brake System**

The vehicle shall be equipped with air-operated brakes and an anti-lock braking system (ABS). The brake system shall meet or exceed the design and performance requirements of the current Federal Motor Vehicle Safety Standard (FMVSS)-121, and the test requirements of the current NFPA 1901 Standard.

A dual-treadle brake valve shall correctly proportion the braking power between the front and rear systems. The air system shall be provided with a rapid pressure build-up feature, designed to meet current NFPA 1901 requirements, to allow the vehicle to begin its emergency response as quickly as possible.

A pressure-protection valve shall be installed to prevent use of the air horns or other air-operated devices should the air system pressure drop below 85 psi. This feature is designed to prevent inadvertent actuation of the emergency/parking brakes while the vehicle is in motion.

Two air pressure needle gauges, one each for front and rear air pressure, with a warning light and buzzer shall be installed at the driver's instrument panel.

The braking system shall be provided with a three minimum 1738 cubic inch air tank reservoirs for a total air system capacity of 5,214 cu. in. One reservoir shall serve as the wet tank and a minimum of one tank shall be supplied for each of the front and rear axles. The total system shall carry a sufficient volume of air to comply with FMVSS-121.

Spring-actuated emergency/parking brakes shall be installed on the rear axle.

A Bendix-Westinghouse SR-1 valve, in conjunction with a double check valve system, shall provide automatic emergency brake application when the air brake system pressure falls below 40 psi in order to safely bring the vehicle to a stop in case of an accidental loss of braking system air pressure.

A four-channel Wabco ABS shall be provided to improve vehicle stability and control by reducing wheel lock-up during braking. This braking system shall be fitted to both front and rear axles. All electrical connections shall be environmentally-sealed for protection against water, weather, and vibration.

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel transmit wheel speed data to an electronic processor, which shall detect approaching wheel lock-up and instantly modulate (or pump) the brake pressure up to five times per second to prevent wheel lock-up. Each wheel shall be individually controlled. To improve field performance, the system shall be equipped with a dual-circuit design configured in a diagonal pattern. Should a malfunction occur in one circuit, that circuit shall revert to normal braking action. A warning light at the driver's instrument panel shall signal a malfunction.

The system shall also be configured to work in conjunction with all auxiliary engine, exhaust, or driveline brakes to prevent wheel lock-up.

To improve maintenance troubleshooting, provisions in the system for an optional diagnostic tester shall be provided. The system shall test itself each time the vehicle is started, and a dash-mounted light shall go out once the vehicle is moving above 4 MPH.

A three year/300,000 mile parts and labor Anti-Locking Braking System (ABS) warranty shall be provided as standard by Meritor Automotive.

### **Park Brake Release**

One Bendix-Westinghouse PP-5 parking brake control valve shall be supplied on the lower dash panel within easy reach of the driver.

### **Air Dryer**

The chassis air system shall be equipped with a Bendix-Westinghouse AD-9 air dryer to remove moisture from the air in order to help prevent the air lines from freezing in cold weather and prolong the life of the braking system components.

### **Air Inlet**

A 1/4" brass quick-release air inlet with a male connection. The inlet shall allow a shoreline air hose to be connected to the vehicle, discharging air directly into the wet tank. It shall be located driver door jamb.

### **Air Lines**

Air-lines shall be constructed of color-coded nylon tubing routed in a manner to protect from damage. Brass fittings shall be provided.

### **Air Horns**

Dual air horns shall be provided and connected to the chassis air system. The horns shall be mounted through the front bumper. The front bumper shall have two holes punched to accommodate the horns. A pressure protection valve shall be installed to prevent the air brake system from being depleted of air pressure.

## **Engine**

The vehicle shall utilize a Cummins ISC 2007 electronic engine as described below:

- 360 gross hp at 2000 rpm
- 1050 lb.-ft. peak torque at 1400 rpm
- Six (6)-cylinder, charge air cooled, 4-cycle diesel
- 506 cu. in. displacement -- 4.49" bore x 5.31" stroke (8.3 liters)
- 16.6:1 compression ratio
- Engine shall be equipped with Full-Authority Electronics
- Electronic Timing Control fuel system
- Fuel cooler (if equipped with a fire pump)
- Fleetguard FS1022 fuel filter with integral water separator and water-in-fuel sensor approved by Cummins for use on the ISC engine
- Fleetguard LF9009 Venturi Combo combination full-flow/by-pass oil filter approved by Cummins for use on the ISC engine
- Engine lubrication system, including filter, shall have a minimum capacity of 25 quarts
- Delco-Remy 39 MD-HD 12-volt starter
- Cummins 18.7 cubic foot per minute (cfm) air compressor
- Corrosion inhibitor additive for coolant system
- Ember separator compliant with 2003 NFPA 1901 standard.

The engine shall be compliant with 2007 EPA Emission standards.

The engine air intake shall be through a grille located over the left-hand front wheel well where it is protected from direct frontal impingement by road debris, dust, road spray, and high-water "bow wakes". The air cleaner shall be a 10" diameter Farr Eco-Lite with a replaceable element. Air cleaner intake piping shall be made from aluminized steel tubing with flexible rubber hoses. Air cleaner intake piping clamps shall be heavy-duty, constant-torque, T-bolt clamps to ensure proper sealing under all temperatures in order to keep dust and other contaminants out of the engine intake air stream and protect the engine.

The engine exhaust piping shall be a minimum of 4" diameter welded aluminized steel tubing. The muffler shall be mounted horizontally under the right-hand frame rail in back of the cab in order to minimize heat transmission to the cab and its occupants. The exhaust shall be directed away from the vehicle on the right side ahead of the rear wheels in order to keep exhaust fumes as far away as possible from the cab and pump operator position.

A five year/100,000-miles parts and labor warranty shall be provided as standard by Cummins.

A copy of the Engine Installation Review stating the engine installation meets Cummins recommendations shall be provided once available. The engine installation shall not require the operation of any type of "power-down" feature to meet engine installation tests.

## **Transmission**

The vehicle shall utilize an Allison EVS3000P, electronic, 5-speed automatic transmission.

A push button shift module Allison model #29538357 shall be located right side of the steering column, within easy reach of the driver. The shift position indicator shall be indirectly lit for after-dark operation. The shift module shall have a “Do Not Shift” light and a “Service” indicator light that are clearly visible to the driver. The shift module shall have means to enter a diagnostic mode and display diagnostic data.

A transmission oil temperature gauge with warning light and buzzer shall be installed on the cab instrument panel to warn the driver of high oil temperatures that may damage the transmission.

The transmission shall have a gross input torque rating of 1250 lb.-ft. and a gross input power rating of 400 HP.

The gear ratios shall be as follows:

- 1 - 3.49
- 2 - 1.86
- 3 - 1.41
- 4 - 1.00
- 5 - .75
- R - 5.03

The transmission shall have an oil capacity of 23 quarts and shall be equipped with a fluid level sensor (FLS) system, providing direct feedback of transmission oil level information to the driver.

A water-to-oil transmission oil cooler shall be provided in the lower tank of the radiator to ensure proper cooling of the transmission when the vehicle is stationary (no air flow). Air-to-oil transmission oil coolers, which require constant air flow, are not acceptable.

The transmission shall be provided with two engine-driven PTO openings located at the 4 o'clock and 8 o'clock positions for flexibility in installing PTO-driven equipment.

The automatic transmission shall be equipped with a power lock-up device. The transmission lock-up shall prevent down shifting of the transmission when the engine speed is decreased during pump operations, thereby maintaining a constant gear ratio for safe operation of the pump. The transmission lock-up shall be automatically activated when the pump is engaged in gear. The transmission lock-up shall be automatically deactivated when the pump is disengaged for normal road operation.

A five year/unlimited miles parts and labor warranty shall be provided as standard by Allison Transmission.

### **Transmission Fluid**

The transmission shall have conventional fluid.

### **Vehicle Speed**

The apparatus shall have a maximum speed of 75 mph.

### **Jacobs Engine Brake**

One Jacobs engine brake shall be installed to assist in slowing and controlling the vehicle as required

by NFPA 1901 for vehicles with gross vehicle weight ratings (GVWR) of 36,000 lbs. or greater. An on-off control switch and a high-low shall be mounted in the cab.

When activated, the Jacobs engine brake shall cut off the flow of fuel to the cylinders and alter the timing of the exhaust valves. This shall transform the engine into a high-pressure air compressor, driven by the wheels, and the horsepower absorbed by the engine in this mode shall slow the vehicle. The selector switch allows the driver to select the amount of retarding power.

When the on-off switch is in the “on” position, the engine brake shall be automatically applied whenever the accelerator is in the idle position and the automatic transmission is in the lock-up mode. If the accelerator is depressed or if the on-off switch is placed in the “off” position, the engine brake shall immediately release and allow the engine to return to its normal function.

## **Engine Cooling**

The cooling system shall have a tube-and-fin radiator with a minimum of 1,360 square inches of frontal area to ensure adequate cooling under all operating conditions. The radiator shall have five rows of brass tubes with sixteen copper fins per inch, and bolted steel top and bottom tanks for durability and ease of repair. There shall be a drain valve in the bottom tank to allow the radiator to be serviced.

There shall be a coolant overflow recovery system provided.

All radiator and heater hoses shall be silicone. Pressure compensating band clamps shall be used to eliminate hose pinching on all hoses over 1”.

The cooling system shall be filled with a 50/50 mixture of water and antifreeze/coolant conditioner to provide freezing protection to minus 40 degrees F for operation in severe winter temperatures.

The system shall include a charge air cooler with a minimum of 880 square inches of frontal area to ensure adequate cooling of the turbocharged air for proper engine operation and maximum performance.

Charge air cooler hoses shall be made from high-temperature wire-reinforced silicone to withstand the extremely high temperatures and pressures of the turbocharged air. The hoses shall incorporate a flexible hump section to allow motion and misalignment of the engine relative to the charge air cooler. Charge air cooler hose clamps shall be heavy-duty, constant-torque, T-bolt clamps to ensure proper sealing under all temperatures in order to keep dust and other contaminants out of the engine intake air stream and protect the engine.

The fan shall be 30” in diameter for maximum airflow and dynamic balance. It shall be made of nylon for strength and corrosion resistance. A fan shroud attached to the radiator shall be provided to prevent recirculation of engine compartment air around the fan in order to maximize the cooling airflow through the radiator.

## **Fuel System**

One 65 gallon fuel tank shall be provided. The tank shall be of an all-welded, aluminized-steel construction with anti-surge baffles and shall conform to all applicable Administration (FHWA)

393.65 and 393.67 standards. The tank shall be mounted below the frame rails at the rear of the chassis for maximum protection. The tank shall be secured with two wrap-around T-bolt type stainless steel straps. Each strap shall be fitted with protective rubber insulation and shall be secured with grade 8 hardware. This design allows for tank removal from below the chassis.

The fuel tank shall be equipped with a 2" diameter filler neck. The filler neck shall extend to the rear of the vehicle behind the rear tires and away from the heat of the exhaust system as required by NFPA 1901 Standard for Automotive Fire Apparatus. The open end of the filler neck shall be equipped with a twist-off filler cap with a retaining chain.

The tank shall be plumbed with top-draw and top-return fuel lines in order to protect the lines from road debris. Bottom-draw and/or bottom-return fuel lines are not acceptable. A vent shall be provided at the top of the tank. The vent shall be connected to the filler neck to prevent splash-back during fueling operations. A .50" NPT drain plug shall be provided at the bottom of the tank.

The tank shall have a minimum useable capacity of 65 gallons of fuel with a sufficient additional volume to allow for thermal expansion of the fuel without overflowing the vent.

A mechanical fuel pump shall be provided and sized by the engine manufacturer as part of the engine.

### **Fuel Line**

All fuel lines shall be rubber.

### **320 AMP Alternator**

There shall be a 320 Amp Leece Neville alternator installed as specified. The alternator shall be a Leece Neville 7890JB series brushless type with integral rectifier and adjustable voltage regulator with an output of 275 amp per NFPA 1901 rating (320 amp per SAE J56).

### **Battery System**

The manufacturer shall supply four heavy-duty Group 31 12-volt maintenance-free batteries. Each battery shall be installed and positioned so as to allow easy replacement of any single battery. Each battery shall be equipped with carrying handles to facilitate ease of removal and replacement. There shall be two steel frame-mounted battery boxes, one on the left frame rail and one on the right frame rail. Each battery box shall be secured to the frame rail with Grade 8 hardware. Each battery box shall hold two batteries. The batteries shall have a minimum combined rating of 4,000 cold cranking amps (CCA) @ 0 degrees Fahrenheit and 820 minutes of reserve capacity for extended operation. The batteries shall have 3/8-16 threaded stud terminals to ensure tight cable connections. The battery stud terminals shall each be treated with concentrated industrial soft-seal after cable installation to promote corrosion prevention. The positive and negative battery stud terminals and the respective cables shall be clearly marked to ensure quick and mistake-proof identification.

Batteries shall be placed on non-corrosive rubber matting and secured with hold-down brackets to prevent movement, vibration, and road shock. The hold-down bracket J-hooks shall be cut to fit and shall have all sharp edges removed. The batteries shall be placed in plastic trays to provide preliminary containment should there be leakage of hazardous battery fluids. There shall be two plastic trays, each containing two batteries. Each battery tray shall be equipped with a rubber vent



hose to facilitate drainage. The rubber vent hose shall be routed to drain beneath the battery box. The batteries shall be positioned in well-ventilated areas.

Batteries shall have a warranty of twelve months that shall commence upon the date of delivery of the apparatus.

### **Drivelines**

Drivelines shall have a heavy-duty metal tube and shall be equipped with Spicer 1710HD universal joints to allow full-transmitted torque to the axle(s). Drive shafts shall be axially straight, concentric with axis and dynamically balanced.

### **Front Tow Hooks**

Two heavy-duty painted front tow hooks shall be securely bolted to the front chassis frame rail extensions to allow towing (not lifting) of the apparatus without damage. They shall be mounted in the downward position.

### **Rear Tow Eyes**

Two heavy-duty tow eyes made of 3/4" thick steel having 2.5" diameter holes shall be mounted below the body at the rear of the vehicle to allow towing (not lifting) of the apparatus without damage. The tow eyes will be welded to the lower end of a 5" steel channel that is bolted at the end of the chassis frame rails. The tow eyes shall be painted chassis black.

### **Cab**

The vehicle shall be distinguished by an all-welded extruded aluminum and fully enclosed tilt cab. The cab shall be designed exclusively for fire/rescue service and shall be pre-engineered to ensure long life. It shall incorporate an integral welded substructure of high-strength aluminum alloy extrusions that creates an occupant compartment that is essentially a protective perimeter.

The cab shall be constructed from minimum 3/16" aluminum alloy plate roof, floor, and outer skins welded to a high-strength 6063-T6 aluminum alloy extruded sub frame. Wall supports and roof bows are 6061 T6 aluminum alloy.

The inner structure shall be designed to create an interlocking internal "roll-cage" effect by welding two 3" x 3" x 0.188" wall-thickness 6063-T5 aluminum upright extrusions between the 3" x 3" x 0.375" wall-thickness 6061-T6 roof crossbeam and the 2.25" x 3" x 0.375" wall-thickness 6063-T6 sub frame structure in the front at the sides of the engine cover. An additional two aluminum upright extrusions within the back-of-cab structure shall be welded between the rear roof perimeter extrusion and the sub frame structure in the rear to complete the interlocking framework. The four upright extrusions -- two in the front and two in the rear -- shall be designed to effectively transmit roof loads downward into the sub frame structure to help protect the occupant compartment from crushing in a serious accident. A diagram or pictorial illustration shall be provided which shows the design of the roll cage provided. Bids which do not include this diagram will be considered non-responsive. All joints shall be electrically seam welded internally using aluminum alloy welding wire.

The sub frame structure shall be constructed from high-strength 6061-T6 aluminum extrusions welded together to provide a structural base for the cab. It shall include a side-to-side C-channel

extrusion across the front, with 3/4" x 2-3/4" full-width cross member tubes spaced at critical points between the front and rear of the cab.

The cab floor shall be constructed from minimum 3/16" smooth aluminum plate welded to the sub frame structure.

The cab roof shall be constructed from minimum 3/16" aluminum tread plate supported by a grid of fore-aft and side-to-side aluminum extrusions. Molded fiberglass or other molded fiber-reinforced plastic roof materials are not acceptable.

The cab roof perimeter shall be constructed from 4" x 6-5/8" (4" x 6.625") 6063-T5 aluminum extrusions with integral drip rails. Cast aluminum corner joints shall be welded to the aluminum roof perimeter extrusions to ensure structural integrity. The roof perimeter shall be continuously welded to the cab roof plate to ensure a leak-free roof structure.

The cab rear skin shall be constructed from minimum 3/16" aluminum plate. Structural extrusions shall be used to reinforce the rear wall.

The left-hand and right-hand cab side skins shall be constructed from minimum 3/16" smooth aluminum plate. The skins shall be welded to structural aluminum extrusions at the top, bottom, and sides for additional reinforcement.

The cab front skins shall be constructed from minimum 3/16" smooth aluminum plate. The upper portion shall form the windshield mask, and the lower portion shall form the cab front. Each front corner shall have a full 9" outer radius for strength and appearance. The left-hand and right-hand sides of the windshield mask shall be welded to the left-hand and right-hand front door frames, and the upper edge of the windshield mask shall be welded to the cab roof perimeter extrusion for reinforcement. The cab front shall be welded to the subframe C-channel extrusion below the line of the headlights to provide protection against frontal impact.

## **Cab Exterior**

The exterior of the cab shall be 94" wide x 130" long to allow sufficient room in the occupant compartment for up to eight fire fighters. The cab roof shall be approximately 101" above the ground with the flat roof option. The back-of-cab to front axle length shall be no less than 58".

Front axle fenderette trim shall be brushed aluminum for corrosion resistance. Bolt-in front wheel well liners shall be constructed of minimum 3/16" non-metallic composite material to provide a maintenance-free, damage-resistant surface.

Side air intakes shall be provided for additional airflow and shall include polished stainless steel grilles.

The cab windshield shall be of a two-piece replaceable design. The windshield shall be made from 1/4" thick curved, laminated safety glass with a 75% light transmittance automotive tint. A combined minimum viewing area of 2,700-sq. in. shall be provided. Forward visibility to the ground for the average (50<sup>th</sup> percentile) male sitting in the driver's seat shall be no more than 11 feet 7 inches from the front of the cab to ensure good visibility in congested areas.

## **Cab Mounts and Cab Tilt System**

The cab shall be independently mounted from the body and chassis to isolate the cab structure from stresses caused by chassis twisting and body movements. Mounting points shall consist of two forward-pivoting points, one on each side; two intermediate rubber load-bearing cushions located midway along the length of the cab, one on each side; and two combination rubber shock mounts and cab latches located at the rear of the cab, one on each side.

An electric-over-hydraulic cab tilt system shall be provided to provide easy access to the engine. It shall consist of two large-diameter, telescoping, hydraulic lift cylinders, one on each side of the cab, with a frame-mounted electric-over-hydraulic pump for cylinder actuation.

Safety flow fuses (velocity fuses) shall be provided in the hydraulic lift cylinders to prevent the raised cab from suddenly dropping in case of a burst hydraulic hose or other hydraulic failure. The safety flow fuses shall operate when the cab is in any position, not just the fully raised position.

The hydraulic pump shall have a manual override system as a backup in the event of an electrical failure. Lift controls shall be located in a compartment to the rear of the cab on the right side of the apparatus. A parking brake interlock shall be provided as a safety feature to prevent the cab from being tilted unless the parking brake is set.

The entire cab shall be tilted through a 42-45 degree arc to allow for easy maintenance of the engine, transmission, and engine components. A positive-engagement safety latch shall be provided to lock the cab in the full tilt position to provide additional safety for personnel working under the raised cab.

In the lowered position, the cab shall be locked down by two automatic, spring-loaded cab latches at the rear of the cab. A “cab ajar” indicator light shall be provided on the instrument panel to warn the driver when the cab is not completely locked into the lowered position.

## **Cab Interior**

The interior of the cab shall be of the open design with an ergonomically-designed driver area that provides ready access to all controls as well as a clear view of critical instrumentation.

The engine cover between the driver and the officer shall be a low-rise contoured design to provide sufficient seating and elbow room for the driver and the officer. The engine cover shall blend in smoothly with the interior dash and flooring of the cab. An all-aluminum sub frame shall be provided for the engine cover for strength. The overall height of the engine enclosure shall not exceed 23” from the floor at each side and 27” in the center section. The engine cover shall not exceed 41” in width at its widest point.

The rear portion of the engine cover shall be provided with a lift-up section to provide easy access for checking transmission fluid, power steering fluid, and engine oil without raising the cab. The engine cover insulation shall consist of 3/4” dual density fiberglass composite panels with foil backing manufactured to specifically fit the engine cover without modification to eliminate “sagging” as found with foam insulation. The insulation shall meet or exceed DOT standard MVSS 302-1 and V-0 (UI subject 94 Test).

Externally, the engine cover is a molded 18 lb/cu. ft (+/-0.5) flexible integral skinned polyurethane foam at a Durometer of 60 (+/- 5.0) per ASTM F1957-99 and with a minimum skin thickness of 0.0625 inches and shall be provided to reduce the transmission noise and heat from the engine. There shall be molded integral arm rests provided for the driver and the officer as well as large cup holders.

All cab floors shall be covered with a black rubber floor mat that provides an aggressive slip-resistant surface in accordance with current NFPA 1901.

A minimum of 57.25" of floor-to-ceiling height shall be provided in the front seating area of the cab and a minimum of 67.25" floor-to-ceiling height shall be provided in the rear seating area. A minimum of 40" of seated headroom shall be provided over each fender well.

The floor area in front of the front seat pedestals shall be no less than 20.5" side to side by 25.0" front to rear for the driver and no less than 20.5" side to side by 26.0" front to rear for the officer to provide adequate legroom.

Battery jumper studs shall be provided to allow jump-starting of the apparatus without having to tilt the cab.

All exposed interior metal surfaces shall be pretreated using a corrosion prevention system.

The interior of the cab shall be insulated to ensure the sound (dbA) level for the cab interior is within the limits stated in the current edition of NFPA 1901. The insulation shall consist of 2 oz. wadding and 1/4" (0.25") foam padding. The padding board shall be backed with 1/4" (0.25") thick reflective insulation. The backing shall be spun-woven polyester. Interior cab padding shall consist of a rear cab headliner, a rear wall panel, and side panels between the front and rear cab doors.

All surfaces subject to repeated contact and wear -- the dash, overhead console, windshield posts, headliner, door panels, and door post trim -- shall be covered with thermoformed, non-metallic, non-fiber trim pieces or panels to provide excellent scuff and abrasion resistance, as well as chemical stain resistance. The thermoformed material shall comply with Federal Motor Vehicle Safety Standard (FMVSS) 302 for flammability of interior materials.

The vehicle shall use a seven-position tilt and telescopic steering column to accommodate various size operators. An 18" padded steering wheel with a center horn button shall be provided.

A full-width overhead console shall be mounted to the cab ceiling for placement of siren and radio heads, and for warning light switches. The console shall be made from a thermoformed, non-metallic material and shall have easily removable mounting plates.

Storage areas, with hinged access doors, shall be provided below both the driver and officer seats. The driver side compartment shall be approximately 20" x 12" x 3.5" high and the officer side compartment shall be approximately 20.25" x 22.75" x 11" high.

The front cab steps shall be a minimum of 8" deep x 24" wide. The first step shall be no more than 24.0" above the ground with standard tires in the unloaded condition per NFPA 1901 standards. The rear cab steps shall be a minimum 12" deep x 21" wide. The first step shall be no more than 24.0" above the ground with standard tires in the unloaded condition per NFPA 1901 standards. The rear

steps shall incorporate intermediate steps for easy access to the cab. The steps are to be located inside the doorsill, where they are protected against mud, snow, ice, and weather. The step surfaces shall be aluminum diamond plate with a multi-directional, aggressive gripping surface incorporated into the aluminum diamond plate in accordance with current NFPA 1901.

A rubber grip handle shall be provided on the interior of each front door below the door window to ensure proper hand holds while entering and exiting the cab. An additional rubber grip handle shall be provided on the left and right side windshield post for additional handholds.

## **Cab Doors**

There shall be reflective signs on each cab door in compliance with all NFPA requirements.

Four side-opening cab doors shall be provided. Doors shall be constructed of a 3/16" aluminum plate outer material with an aluminum extruded inner framework to provide a structure that is as strong as the side skins.

Front cab door openings shall be approximately 36" wide x 71.5" high, and the rear cab door openings shall be approximately 33.75" wide x 85" high. The front doors shall open approximately 75 degrees, and the rear doors shall open approximately 80 degrees.

The doors shall be securely fastened to the doorframes with full-length, stainless steel piano hinges, with 3/8" diameter pins for proper door alignment, long life, and corrosion resistance. Mounting hardware shall be treated with corrosion-resistant material prior to installation. For effective sealing, an extruded rubber gasket shall be provided around the entire perimeter of all doors.

Stainless steel paddle-style door latches shall be provided on the interiors of the doors. The latches shall be designed and installed to protect against accidental or inadvertent opening as required by NFPA 1901.

The front door windows shall provide a minimum viewing area of 530 sq. in. each. The rear door windows shall provide a minimum viewing area of 500 sq. in. each. All windows shall have 75% light transmittance automotive safety tint. Full roll-down windows shall be provided for the front cab doors with worm gear drive cable operation for positive operation and long life. Scissors or gear-and-sector drives are not acceptable.

## **Cab Instruments and Controls**

Two pantograph-style windshield wipers with two separate electric motors shall be provided for positive operation. Air-operated windshield wipers are not acceptable because of their tendency to accumulate moisture. The wipers shall be a wet-arm type with a one gallon washer fluid reservoir, an intermittent-wipe function, and an integral wash circuit. Wiper arm length shall be approximately 28", and the blade length approximately 20". Each arm shall have a 70 degree sweep for full coverage of the windshield.

An overhead mounted heater and defroster with a minimum capacity of 60,000 Btu/hr and all necessary controls shall be mounted in the cab. The airflow system shall consist of two levels, defrost and cab, and shall have fresh air and defogging capabilities.

Cab controls shall be located on the cab instrument panel in the dashboard on the driver's side where they are clearly visible and easily reachable. Emergency warning light switches shall be installed in removable panels for ease of service. The following gauges and/or controls shall be provided:

- Master battery switch/ignition switch (rocker with integral indicator)
- Starter switch/engine stop switch (rocker)
- Heater and defroster controls with illumination
- Marker light/headlight control switch with dimmer switch
- Self-canceling turn signal control with indicators
- Windshield wiper switch with intermittent control and washer control
- Master warning light switch
- Transmission oil temperature gauge
- Air filter restriction indicator
- Pump shift control with green "pump in gear" and "o.k. to pump" indicator lights
- Parking brake controls with red indicator light on dash
- Automatic transmission shift console
- Electric horn button at center of steering wheel
- Cab ajar warning light on the message center enunciator

Controls and switches shall be identified as to their function by backlit wording adjacent to each switch, or indirect panel lighting adjacent to the controls.

### **Fast Idle System**

A fast idle system shall be provided and controlled by the cab-mounted or pump panel-mounted switch. The system shall increase engine idle speed to a preset RPM for increased alternator output.

### **Electrical System**

The cab and chassis system shall have a centrally located electrical distribution area. All electrical components shall be located such that standard operations shall not interfere with or disrupt vehicle operation. An automatic thermal-reset master circuit breaker compatible with the alternator size shall be provided. Automatic-reset circuit breakers shall be used for directional lights, cab heater, battery power, ignition, and other circuits. An access cover shall be provided for maintenance access to the electrical distribution area.

A minimum 6 place, constantly hot, and 6 place ignition switched fuse panel and ground for customer-installed radios and chargers shall be provided at the electrical distribution area. Radio suppression shall be sufficient to allow radio equipment operation without interference.

All wiring shall be mounted in the chassis frame and protected from impact, abrasion, water, ice, and heat sources. The wiring shall be color-coded and functionally-labeled every 3" on the outer surface of the insulation for ease of identification and maintenance. The wiring harness shall conform to SAE 1127 with GXL temperature properties. Any wiring connections exposed to the outside environment shall be weather-resistant. All harnesses shall be covered in a loom that is rated at 280 degrees F to protect the wiring against heat and abrasion.

A Vehicle Data Computer (VDC) shall be supplied within the electrical system to process and distribute engine and transmission Electronic Control Module (ECM) information to chassis system gauges, the message center, and related pump panel gauges. Communication between the VDC and chassis system gauges shall be through a four wire multiplexed communication system to ensure accurate engine and transmission data is provided at the cab dash and pump. The VDC shall be protected against corrosion, excessive heat, vibration, and physical damage.

Two dual rectangular sealed beam halogen headlights shall be installed on the front of the cab, one on each side, mounted in a polished chrome-plated bezel. The low beam headlights shall activate with the release of the parking brake to provide daytime running lights (DRL). The headlight switch shall automatically override the DRL for normal low beam/high beam operation.

### **Cab Crashworthiness Requirement**

The apparatus cab shall meet and/or exceed relevant load and impact tests required for compliance certification with ECE Regulation No. 29, Addendum 28, Revision 1, "Uniform Provisions Concerning the Approval of Vehicles with Regard to the Protection of the Occupants of the Cab of a Commercial Vehicle."

As part of this test (Regulation No. 29), a pendulum weight of 3,700 lbs. shall strike the apparatus cab with a frontal impact. The pendulum weight shall have been released from approximately 9' above the ground, imparting over 32,500 ft. lbs. of energy into the cab. This event shall simulate a 3,700 lb. vehicle hitting the cab at approximately 16 MPH. Upon completion, there shall be minimal to no intrusion into the cab's occupant compartment, and the cab doors shall be capable of opening readily.

A copy of a certificate or letter verifying minimum compliance to Regulation No. 29 by an independent, licensed, professional engineer shall be provided with the bid.

In terms of exceeding the requirements of Regulation No. 29, the apparatus cab shall be capable of withstanding with minimal intrusion to the occupant compartment, the following tests:

- With the apparatus cab positioned at an angle of 49 degrees to a line running perpendicular in the center of a pendulum test weight, or 41 degrees to a line running parallel to the face of the same weight, an impact test shall have been executed. A 3,700 lb. pendulum shall have been positioned to strike the driver's side corner of the cab with the center of gravity of the pendulum at 53" above the ground reference plane. The pendulum test weight shall have been released from a height of 158.25" above the same ground reference plane. At this drop height, when released, the pendulum shall impart 32,715 ft. lbs. of energy into the driver's side corner. Upon completion, the resultant impact shall not cause significant intrusion to the driver's space. This shall have been verified with the placement of a 50th percentile male mannequin into the driver's seat after the impact.
- After completion of the test noted in #1 above, the apparatus cab shall have been submitted to a static cab roof load test exceeding Regulation No. 29. With minimal deformation or intrusion, the cab structure shall withstand a static load of 54,300 lbs., exceeding Regulation No. 29 by two and half times (2.5 x) the required amount.

For any or all of the above tests, the cab manufacturer shall provide either photographs or video footage of the procedure upon request.

## **ISO Compliance**

The manufacturer shall ensure that the construction of the apparatus cab shall be in conformance with the established ISO-compliant quality system. All written quality procedures and other procedures referenced within the pages of the manufacturer's Quality Manual, as well as all work instructions, workmanship standards, and calibration administration that directly or indirectly impact this process shall be strictly adhered to. By virtue of its ISO compliance the manufacturer shall provide an apparatus cab that is built to exacting standards, meets the customer's expectations, and satisfies the customer's requirements.

## **Raised Roof**

The rear portion of the cab roof shall be raised 12" minimum. This will provide at least 5'-7" standing room. The front of the vista hood shall be sloped at 45 degrees from the vertical. The slope shall begin slightly in front of the centerline of the front axle to leave room for warning lights and air conditioning in front of the vista. The main roof extrusion shall extend up into the vista to strengthen the roof perimeter. Windows shall be provided on front, side, and rear unless otherwise specified.

The rear door shall have an 85" vertical dimension for improved ingress/egress characteristics. The door shall be equipped with a dual striker bolt system.

## **Grille**

The front cooling air intake grille shall be constructed of stainless steel mesh and supported by an impact-resistant chrome plated ABS frame providing no less than 80% open area for excellent cooling performance.

## **Cab Front Door Windows**

Driver and officer door windows shall have the support pillar located toward the front of the window. There shall be a vent that can be opened and closed within the window itself, located towards the front.

## **Cab Front Windows**

The front windows of the cab shall be manually operated to raise and lower.

## **Cab Door Rear Windows**

The rear cab door windows shall be manually operated to raise and lower.

## **Cab Door Panels**

The inner door panels shall be made from a thermoformed, non-metallic, non-fiber material for increased durability and sound deadening. The cab door panels shall incorporate an easily removable panel for access to the latching mechanism for maintenance or service.



### **Cab Door Exterior Latches**

All cab doors shall have "L" style exterior door latches.

### **Cab Door Handle Scuff Plates**

A stainless steel scuff plate shall be installed at all cab door "L" handles for added paint protection.

### **Cab Door Kick Plate**

All cab doors shall have diamond plate aluminum kick plates installed on the interior lower portion of the doors.

### **Cab Step Area Lighting**

There shall be four clear incandescent lights provided to illuminate the cab step well area. Each light shall be located on each cab door in the inboard position. Each light shall be activated by the cab door ajar circuit.

### **Cab Door Reflective Material**

Reflective White/Red material striping shall be supplied on each of the lower cab doors. The stripes shall run from the top outer corner to the bottom inside corner of the panel, forming a "V" shape when viewed from the rear. The reflective material shall meet NFPA 1901 requirements.

### **Cab Mirrors**

Two Ramco model 6001FFR remote controlled aluminum mirrors shall be installed. The mirrors shall incorporate a full face main section with a convex mirror with housing, model CAS750, mounted to the top. The adjustment of main sections shall be through dash mounted switches. Location: mounted on front corners of cab

### **Rear Cab Wall Construction**

The rear cab wall shall be constructed with the use of 3/16" aluminum diamond plate interlocking in aluminum extrusions.

### **Front Mud Flaps**

Black linear low density polyethylene (proprietary blend) mud flaps shall be installed on the rear of the cab front wheel wells. The design of the mud flap shall have corrugated ridges to distribute water evenly.

### **Cab Windows Rear Wall**

Fixed glass windows shall be supplied on either side of the cab, providing visibility at the rear. The windows shall be approximately 4" wide and approximately the same height as the door windows.

### **Cab Canopy Window**

There shall be a fixed window provided between the front and rear doors on the driver's side of the cab.

## **Handrails**

Cab door assist handrails shall consist of two 1.25" diameter x 18" long 6063-T5 anodized aluminum tubes mounted directly behind the driver and officer door openings each side of the cab. The handrails shall be machine extruded with integral ribbed surfaces to assure a good grip for personnel safety. Handrails shall be installed between chrome end stanchions and shall be positioned at least 2" from the mounting surface to allow a positive grip with a gloved hand.

## **Cab Canopy Window**

There shall be a fixed window provided between the front and rear doors on the officer's side of the cab.

## **Handrails**

Cab door assist handrails shall consist of two 1.25" diameter x 36" long 6063-T5 anodized aluminum tubes mounted directly behind the driver and officer rear door openings each side of the cab. The handrails shall be machine extruded with integral ribbed surfaces. Handrails shall be installed between chrome end stanchions and shall be positioned at least 2" from the mounting surface to allow a positive grip with a gloved hand.

## **Air Conditioning**

An overhead air-conditioner / heater system with a single radiator mounted condenser shall be supplied.

The unit shall be mounted to the cab interior headliner in a mid cab position, away from all seating positions. The unit shall provide ten comfort discharge louvers, four to the back area of the cab and six to the front. These louvers will be used for AC and heat air delivery. Two additional large front louvers shall be damper controlled to provide defogging and defrosting capabilities to the front windshield as necessary.

The unit shall consist of a high output evaporator coil and heater core with one high output dual blower for front air delivery, and two high performance single wheel blowers for rear air delivery.

The control panel shall actuate the air-distribution system with air cylinders, which are to be separated from the brake system by an 85-90 psi pressure protection valve. A three-speed blower switch shall control air speed.

The condenser shall be radiator mounted and have a minimum capacity of 65,000 BTU's and have dual fans with a built in receiver drier.

Performance Data: (Unit only, no ducting or louvers)

AC BTU: 55,000

Heat BTU: 65,000

CFM : 950 @ 13.8V (All blowers)

The compressor shall be a ten-cylinder swash plate type Seltec model TM-31HD with a capacity of 19.1 cu.in. per revolution.

## **Seating**

All seats shall be 911 brand.

All seats shall have vinyl fabric.

All seats shall be gray in color.

Seats, Inc 911 air suspension seat shall be supplied for the driver's position.

Features shall include:

- Universal styling
- High back seat back
- Low profile air suspension assembly with rubber accordion cover
- Weight, height and ride adjustment
- Built-in back and lumbar adjustment
- 4" fore and aft adjustment.

All seat positions shall have a retractable 3-point lap and shoulder harness, providing additional safety and security for personnel. Extensions shall be provided with the seat belts so the male end can be easily grasped and the female end easily located while sitting in a normal position.

One Seats, Inc. 911 Universal fixed SCBA seat shall be supplied for the officer's position in front of the cab to the right of the driver's position.

Features shall include:

- Universal styling
- High back seat back
- Built-in back and lumbar adjustment
- Easy exit, flip up, and split headrest for improved exit with SCBA.

All seat positions shall have a retractable 3-point lap and shoulder harness, providing additional safety and security for personnel. Extensions shall be provided with the seat belts so the male end can be easily grasped and the female end easily located while sitting in a normal position.

One Seats, Inc. 911 Universal SCBA seat shall be provided in the rear facing position over the driver side wheel well.

Features shall include:

- Universal styling
- High back seat back
- Easy exit, flip up, and split headrest for improved exit with SCBA.

All seat positions shall have a retractable 3-point lap and shoulder harness, providing additional safety and security for personnel. Extensions shall be provided with the seat belts so the male end can be easily grasped and the female end easily located while sitting in a normal position.

One Seats, Inc. 911 Universal SCBA seat shall be provided in the rear facing position over the officer side wheel well.

Features shall include:

- Universal styling

- High back seat back
- Easy exit, flip up, and split headrest for improved exit with SCBA.

All seat positions shall have a retractable 3-point lap and shoulder harness, providing additional safety and security for personnel. Extensions shall be provided with the seat belts so the male end can be easily grasped and the female end easily located while sitting in a normal position.

Two Seats, Inc. 911 Universal SCBA seat backs and a two person bench style seat bottom with a single cushion shall be mounted on the rear wall of the cab. Each side of the seat riser shall be angled, providing sufficient legroom while entering and exiting the cab.

Features shall include:

- Universal styling
- Easy exit, flip up, and split headrest for improved exit with SCBA
- Bench cushion shall be constructed of high-density foam with a heavy-duty wear resistant material.

All seat positions shall have a retractable 3-point lap and shoulder harness, providing additional safety and security for personnel. Extensions shall be provided with the seat belts so the male end can be easily grasped and the female end easily located while sitting in a normal position.

### **Seating Capacity**

A tag that is in view of the driver stating seating capacity of six personnel shall be provided.

### **Cab Interior Color**

Cab instrument panel, overhead console, trim panels, headliner, and door panels shall be gray.

### **Cab Dome Lights**

A dome light assembly consisting of a 3-position assembly mounted rocker switch, thirty-one candlepower incandescent 4" stainless steel white dome light and a thirty-one candlepower incandescent 4" stainless steel red dome light and plastic housing shall be installed.

The white lights activate with appropriate cab door and light assembly mounted rocker switch, the red light activates with assembly mounted rocker switch only.

### **Battery Charger**

A Supersmart microprocessor controlled charging system shall be installed. The system shall have a 110 volt, 60 hertz, 5.25 amp input with output of 20 amps 12 volts DC.

The battery charging system shall be installed and connected directly to the shoreline to ensure the batteries remain fully charged while the vehicle is in the fire station or firehouse.

The system shall provide a visual signal if battery voltage drops below 11.5 volts. The microprocessor shall be continuously powered from the battery to provide the charge status.

Equalization charge shall only occur when necessary, not with every cycle. The system shall fully charge the batteries while allowing up to 8 amps of additional load for onboard systems.

## **Battery Charger Receptacle**

A 20 amp battery charger receptacle shall be installed in the specified location.

The receptacle shall be located outside driver's door next to handrail

The cover color shall be Yellow

## **English Dominant Gauge Cluster**

The cab operational instruments shall be located in the dashboard on the driver side of the cab and shall be clearly visible. The gauges in this panel shall be English dominant and shall be the following:

- Speedometer/Odometer
- Tachometer with integral hour meter
- Engine oil pressure gauge with warning light and buzzer
- Engine water temperature gauge with warning light and buzzer
- Two air pressure gauges with a warning light and buzzer (front air and rear air)
- Fuel gauge
- Voltmeter
- Transmission oil temperature gauge.

This panel shall be backlit for increased visibility during day and night time operations.

## **Headlights**

The front of the cab shall have four headlights. The headlights shall be mounted on the front of the cab in the lower position. The headlights shall be day time operational.

## **Cab Turn Signals**

There shall be a pair of Federal Signal QuadraFlare model QL64Z-ARROW LED (Light Emitting Diode) turn signal light heads with populated arrow pattern and amber lens mounted upper headlight bezel and wired with weatherproof connectors.

## **Cab 12 Volt Outlet**

A plug-in type receptacle for hand held spotlights, cell phones, chargers, etc. shall be installed officer side dash. The receptacle shall be wired battery hot.

## **Driver Side Assembly**

The driver side assembly shall be constructed entirely of aluminum extrusions and interlocking aluminum plates. This aluminum modular design shall provide a high strength-to-weight ratio for increased equipment carrying capacity.

The driver side body corners shall be 6063-T5 extruded aluminum corner sections with a 3/16" wall thickness. The side body extrusions shall be 6063-T5 aluminum tubing with a 3/16" wall thickness and 3/16" outside corner radius. The corners and sides shall be welded both internally and externally at each joint using an aluminum alloy welding wire.

The driver side body shall be completely sanded and deburred to assure a smooth finish and painted job color.

### **Driver Side Compartments**

The three driver side compartments shall be constructed from 3003 H14 1/8" smooth aluminum plate. The compartments shall be modular in design and shall not be a part of the body support structure.

There shall be one compartment located ahead of the rear wheels. This compartment shall be approximately 42" wide x 68" high x 26" deep in the lower 57" high section and 12" deep in the upper 11" high section. The compartment shall contain approximately 39.2 cu. ft. of combined storage space. The door opening shall be approximately 42" wide x 68" high.

There shall be one compartment located over the rear wheel. The compartment shall be approximately 56" wide x 34" high x 26" deep and contain approximately 28.6 cu. ft. of storage space. The door opening shall be approximately 56" wide x 34" high.

There shall be one compartment located behind the rear wheel. The compartment shall be approximately 56" wide x 68" high. The forward area of the compartment shall be approximately 42" wide x 68" high x 26" deep in the lower 57" high section and 12" deep in the upper 11" high section. The enhanced extended rear portion of the compartment shall be approximately 14" wide x 68" high x 25" deep in the lower 57" high section and 11" deep in the upper 38" high section. The total combined storage space shall be approximately 51.7 cu. ft. The door opening shall be approximately 56" wide x 68" high.

Each compartment seam shall be sealed using a permanent pliable silicone caulk. The walls of each compartment shall be machine-louvered for adequate ventilation.

An externally-mounted compartment top shall be provided and constructed of a 1/8" aluminum treadplate.

### **Officer Side Assembly**

The officer side assembly shall be constructed entirely of aluminum extrusions and interlocking aluminum plates. This aluminum modular design shall provide a high strength-to-weight ratio for increased equipment carrying capacity.

The officer side body corners shall be 6063-T5 extruded aluminum corner sections with a 3/16" wall thickness. The side body extrusions shall be 6063-T5 aluminum tubing with a 3/16" wall thickness and 3/16" outside corner radius. The corners and sides shall be welded both internally and externally at each joint using an aluminum alloy welding wire.

The officer side body shall be completely sanded and deburred to assure a smooth finish and painted job color.

## **Officer Side Compartments**

The three officer side compartments shall be constructed from 3003 H14 1/8" smooth aluminum plate. The compartments shall be modular in design and shall not be a part of the body support structure.

There shall be one compartment located ahead of the rear wheel. The compartment shall be approximately 42" wide x 68" high x 26" deep in the lower 30" high section and 12" deep in the upper 38" high section. The compartment shall contain approximately 30 cu. ft. of combined storage space. The door opening shall be approximately 42" wide x 68" high.

There shall be one compartment located over the rear wheel. The compartment shall be approximately 56" wide x 34" high x 12" deep and contain approximately 13.2 cu. ft. of storage space. The door opening shall be approximately 56" wide x 34" high.

There shall be one compartment located behind the rear wheel. The compartment shall be approximately 56" wide x 68" high. The forward area of the compartment shall be 42" wide x 30" high x 26" deep in the lower area and 42" wide x 38" high x 12" deep in the upper area. The enhanced extended rear portion of the compartment shall be approximately 14" wide x 68" high x 25" deep in the lower 30" high section and 11" deep in the upper 38" high section. The total combined storage space shall be approximately 39.5 cu. ft. The door opening shall be approximately 56" wide x 68" high.

Each compartment seam shall be sealed using a permanent pliable silicone caulk. The walls of each compartment shall be machine-louvered for adequate ventilation.

An externally-mounted compartment top shall be provided and constructed of a 1/8" aluminum tread plate.

## **Ladder Storage Tunnel**

The area directly behind the upper area of the officer side compartments shall be for the storage of NFPA ladders and/or equipment.

The storage tunnel shall store and secure one extension ladder, one roof ladder, two pike poles, and one attic ladder.

## **Rear Body Assembly**

The rear body shall be constructed entirely of aluminum extrusions and interlocking aluminum plates and includes a full height center rear compartment.

The rear body frame shall be 6063-T5 1.5" x 4" and 1.5" x 3" aluminum extrusions with a 3/16" wall thickness and 3/16" outside corner radius and 1/8" aluminum tread plate. The rear extrusions shall be welded both internally and externally at each joint using an aluminum alloy welding wire.

## **Rear Body Compartment**

The full height center rear compartment shall be constructed from 3003 H14 1/8" smooth aluminum plate. The compartment shall be modular in design and shall not be a part of the body support structure.

The compartment shall be approximately 38" wide and shall vary in height and depth dependent upon water tank capacity.

The compartment seams shall be sealed using a permanent pliable silicone caulk. Machined louvers shall be provided for adequate ventilation.

## **Storage Compartments**

A storage compartment shall be provided at the rear body compartment. The storage compartment shall be located to the officer side of the rear compartment.

The storage compartment shall be approximately 13" wide x 29" high x length of side assembly. The storage compartment shall store NFPA ladder and/or equipment. The storage compartment shall include upper and lower supports to store up to two ladders, one attic ladder, and two pike poles.

The storage compartment shall include a vertically hinged door to secure contents. The door shall be constructed of 3/16" aluminum tread plate and shall have a push-button style latch. The compartment door shall be securely attached with a full-length stainless steel piano type hinge with 1/4" pin. The hinge shall be "staked" on every other knuckle to prevent the pins from sliding. The door shall be wired to the door ajar indicator light in the cab and shall be interlocked with the parking brake per NFPA.

## **Tailboard Step**

A tailboard step shall be provided at the rear of the body. The tailboard shall 15.5" in depth and in accordance with NFPA in both step height and stepping surface. The maximum rear step height to the tailboard shall not exceed 24".

The tailboard step shall be formed from 3/16" aluminum tread plate and shall be reinforced with 6063-T5 1.5" x 3" aluminum extrusion. The tailboard shall be in accordance with current NFPA requirements and shall include a multi-directional aggressive gripping surface incorporated into the diamond plate. The surface shall extend vertically from the diamond plate sheet a minimum of 1/8". Gripping surfaces shall be circular in design, a minimum of 1" diameter and on centers not to exceed 4".

The tailboard step shall be bolted on to the body from the underside assuring a clear surface and shall be easily removable for replacement in the case of damage.

## **Enhanced Extended Compartment Framework**

Each side of the tailboard shall be the external compartment frame work of the enhanced extended side compartments. The compartment frame work shall be 6063-T5 1.5"x 4" and 1.5" x 3" aluminum



extrusions with a 3/16" wall thickness and 3/16" outside corner radius. The rear extrusions shall be welded both internally and externally at each joint using an aluminum alloy welding wire.

### **Rear Access Handrails**

Three handrails shall be provided at the rear of the body to assist ground personnel accessing the tailboard step and hose bed area. Each handrail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, and shall be mounted between chrome stanchions.

Three handrails shall be located:

- Two handrails, one on each side, appropriately sized handrail mounted vertically on the trailing edge of the body
- One appropriately sized handrail mounted horizontally below the rear hose bed opening.

### **Roll Up Compartment Door**

A ROM brand roll up door with satin finish shall be provided on all compartments. The door(s) shall be installed in the following location(s): L1, L2, L3, R1, R2, R3, and B1

The Robinson door slats shall be double wall box frame and manufactured from anodized aluminum. The slats shall have interlocking end shoes on each slat. The slats shall have interlocking joints with a PVC/vinyl inner seal to prevent any metal to metal contact and inhibit moisture and dust penetration.

The track shall be anodized aluminum with a finishing flange incorporated to provide a finished look around the perimeter of the door without additional trim or caulking. The track shall have a replaceable side seal to prevent water and dust from entering the compartment.

The doors shall be counterbalanced for ease in operation. A full width latch bar shall be operable with one hand, even with heavy gloves. Securing method shall be a positive latch device.

A magnetic type switch integral to the door shall be supplied for door ajar indication and compartment light activation.

The door opening shall be reduced by 2" in width and approximately 8-9" in height depending on door height.

### **Adjustable Shelf**

There shall be an aluminum adjustable shelf provided for compartment L3, R3, B1.

The shelf shall be constructed of 3/16" smooth aluminum plate. The shelf shall have a minimum 2" front lip to accommodate optional plastic interlocking compartment tile systems. For additional strength and reinforcement of the shelf a Super Z break shall be provided. The adjustable shelf shall be capable of holding 250 lb.

The shelf shall be sized, width and depth, to match the size and location in the compartment.

### **Adjustable Shelf**

There shall be an aluminum adjustable shelf provided in the upper area of compartment R2 upper.

The shelf shall be constructed of 3/16" smooth aluminum plate. The shelf shall have a minimum 2" front lip to accommodate optional plastic interlocking compartment tile systems. The adjustable shelf shall be capable of holding 100 lbs.

The shelf shall be sized, width and depth, to match the size and location in the compartment.

### **Shelf Tracks**

Tracks shall be provided in R3 lower for use with adjustable shelves and/or trays. The tracks shall be vertically mounted and attached to the side and/or rear walls of the compartments.

Tracks shall be provided in L3, B1 for use with adjustable shelves and/or trays. The tracks shall be vertically mounted and attached to the side and/or rear walls of the compartments.

Tracks shall be provided in R2 upper for use with upper area adjustable shelves. The tracks shall be vertically mounted and attached to the side and/or rear walls of the compartments.

### **Permanent Shelf**

There shall be a permanent mounted aluminum shelf provided for compartment R1 at offset, R3 at offset. The shelf shall be at the offset within the compartment.

The shelf shall be constructed of 3/16" smooth aluminum plate. The shelf shall have a minimum 2" front lip for added strength and reinforcement and to accommodate optional plastic interlocking compartment tile systems.

The shelf shall be capable of holding 100 lbs.

### **Roll-Out Tray**

There shall be a floor mounted roll-out tray provided in compartment L3, R3.

The roll-out tray shall be constructed of 3/16" smooth aluminum plate with a sanded finish and welded corners for increased strength and rigidity. The tray shall be sized in width and depth as applicable.

The drawer slides shall permit the tray to roll-out of the compartment approximately eighty percent of the compartment depth. The tray shall utilize a pneumatic shock to secure the tray in the open or closed position.

The tray shall have a total capacity of 250 lbs.

### **Running board Suction Trays**

A running board suction hose storage tray shall be provided and located in the driver side running board, officer side running board.

The tray shall be recessed mounted and constructed of 1/8" aluminum diamond plate (exterior) with a smooth sanded surface interior. The bottom of the tray shall have removable aluminum slats and drain holes to allow water drainage from hose stored in the tray.

### **Tool Boards**

Two adjustable roll-out aluminum tool boards shall be provided for compartment(s) L1.

The tool board shall be constructed of 3/16" smooth aluminum plate with a sanded finish and be sized in height and depth as applicable.

The tool board shall be mounted on drawer slides, at the top and bottom that will permit the board to roll out of the compartment for easier access to tools and/or equipment. The slide mechanisms shall have ball bearings for ease of extension and retraction operation and dependable service. The tool board shall be mounted at top and bottom on adjustable tracking for ease of placement.

The capacity rating shall be 250 lb. maximum at full extension. A pneumatic shock shall be utilized to secure the tool board in the open or closed position.

### **Hose bed Cover**

A cover constructed of Red 18 oz. PVC vinyl coated polyester shall be installed over the apparatus hose bed. The base fabric shall be 1000 x 1300 Denier Polyester with a fabric count of 20 x 20 square inch.

The front edge of the cover shall be mechanically attached to the body. The sides of the cover shall be held in place with heavy duty Velcro strips running the length of the hose bed. The rear of the cover shall have an integral flap that extends down to cover the rear of the hose bed. This flap shall be secured in place with heavy duty nylon straps to comply with the latest edition of NFPA 1901.

### **Cross lay Cover**

A cover constructed of Red 18 oz. PVC vinyl coated polyester shall be installed on the apparatus cross lay. The base fabric shall be 1000 x 1300 Denier Polyester with a fabric count of 20 x 20 square inch.

The cover shall be held in place across the top of the body by chrome snaps. The sides of the cover shall have integral flaps that extend down to cover the sides of the cross lay. The side flaps shall be secured in place to comply with the latest edition of NFPA 1901.

### **Running Board Tray Securing Strap**

A heavy duty black nylon strap with a clip release shall be provided for the running board hose tray(s). The strap shall be attached to the inboard side of the tray as low as practical to allow cinching of strap for securing tray contents and shall not reduce the overall tray capacity.

Location: driver side running board, officer side running board

### **Top Mount Pump Module**

A top mount pump module shall be provided. It shall include an area for single stacked triple cross lay with notched dividers and a top mount walkway with folding steps with integral lights and two vertical mounted handrails.

### **Top Mount Pump Panels**

The top mount gauge panel, driver, and officer side pump panels shall be constructed of 14 gauge stainless steel.

The top mount gauge panel shall be able to lift forward for access to panel mounted electrical connections.

The driver and officer panels shall have the ability to be removed from the module for easier access and for maintenance in the pump area.

### **Pump Access Doors**

The driver and officer side pump panels shall be divided into two or three pieces, depending on the height of the module, and vertically hinged.

The pump panels shall be securely attached with a vertical full-length stainless steel piano type hinge with 1/4" pins along the forward edge of the pump module. The hinge shall be "staked" on every other knuckle to prevent the pin from sliding. The panels shall have push button style latches to secure the panels in the closed position and one pneumatic shock to hold the upper panels in the open position.

### **Control Panel Access**

The gauge panel shall swing downward/forward for access to electrical connections on panel.

### **Pump Panel Tags**

Color coded pump panel labels shall be supplied to be in accordance with NFPA compliance.

### **Top Mount Walkway Compartments**

Top mount walkway compartments shall be provided. They shall include spring mounted hinged doors with push button latches. Each compartment shall include one incandescent light and shall be wired to a door ajar indicator

### **Pump Module Mainframe**

The module mainframe shall be for use with Typhoon chassis.

### **Booster Tank**

A 1000 gallon rectangular booster tank shall be supplied. The booster tank shall be of a pinned baffle design. The booster tank shall be completely removable without disturbing or dismounting the apparatus body structure.

The booster tank top, sides, and bottom shall be constructed of 1/2" black UV-stabilized copolymer polypropylene. The copolymer polypropylene tank material shall be welded together utilizing thermoplastic welding technology. A clean hot air temperature controlled process, shall ensure that

each weld reaches its plasticized state without cold or hot spots. The copolymer polypropylene material shall be used for its high strength and corrosion resistance for a prolonged tank life.

The booster tank shall have a fill tower with a rearward hinged lid. The fill tower shall be located in the forward area of the tank and shall assist with tank ventilation. The fill tower shall include a removable 1/4" thick polypropylene screen.

The booster tank shall have two tank plumbing openings. One for a tank-to-pump suction line with an anti-swirl plate, and one for a tank fill line. A 3" cleanout plug shall be provided at the bottom of the tank sump.

The booster tank shall include longitudinal and latitudinal baffles. The baffles shall be interlocking and thermo welded to the shell of the tank to minimize water surge during travel and provide enhanced road handling stability. The baffle design shall allow water flow in accordance with NFPA during tank filling or pump operations.

A 2.5' length of black flex hose shall be installed to the bottom of the tank. This shall direct the draining of overflow water past the rear axle and fuel tank, thus reducing the possibility of freeze-up of these components in cold environments. This drain configuration shall also assure that rear axle tire traction shall not be affected when moving forward.

The booster tank shall undergo extensive testing prior to installation in the truck. The testing shall include an electronic spark and tank fill test after both the internal and external tank shell welds are completed.

A lifetime manufacture's limited warranty shall be included.

### **Tank Fill**

One 2" pump-to-tank fill line having a 2" manually operated full flow valve. The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times. The fill line shall be controlled using a chrome handle with an integral tag.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

### **Tank to Pump Line**

One manually operated 3" Akron valve shall be installed between the pump suction and the booster tank in order to pump water from the tank. The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

### **Foam Tank**

A 30 gallon foam cell for class “A” foam shall be supplied. The foam cell shall be integral to the water tank.

The integral tank top, sides, and bottom shall be constructed of black UV-stabilized copolymer polypropylene. The copolymer polypropylene tank material shall be welded together utilizing thermoplastic welding technology. A clean hot air temperature controlled process, shall ensure that each weld reaches its plasticized state without cold or hot spots. The copolymer polypropylene material shall be used for its high strength and corrosion resistance for a prolonged tank life.

The foam tank shall have one fill tower with a hinged lid. The foam fill tower shall include a stainless steel butterfly latch to secure the lid in the closed position and a pressure/vacuum vent mounted in the lid. The fill tower shall be located in the forward area of the tank. The fill tower shall include a removable 1/4” thick polypropylene screen.

The foam tank shall undergo extensive testing prior to installation in the truck. The testing shall include an electronic spark and tank fill test after both the internal and external tank shell welds are completed.

A lifetime manufacture’s limited warranty shall be included. As this vehicle is intended to perform the function of a pumper with foam capability, foam tank capacity of less than 30 gallons shall not be acceptable.

### **Ladder Brand**

The ladder brand that shall be carried on the unit shall be Alco-Lite.

The unit shall accommodate the following ladders: 24' 2-Section and 14' roof ladder.

### **Hard Suction Rack**

One hard suction hose storage rack shall be provided on the driver side compartment top.

One hard suction hose storage rack shall be provided on the officer side compartment top.

The storage rack shall be constructed of anodized extruded aluminum and includes two spring-mounted latch handles with stainless steel scuff plates. The scuff plates shall be located on the hosebed side to protect the painted surface.

Each storage rack shall store one 6" x 10' hard suction hose.

### **Hose bed Folding Steps**

Heavy-duty folding steps shall be positioned to the driver side rear of the body. The steps shall be NFPA compliant for access to the hose bed storage area and in step height and surface area. The steps shall be staggered stepped as applicable with tailboard depth, not applicable with recessed step mounting.

The step shall have an aggressive cleat pattern with NFPA compliant non-slip surface, rubber bumper preventing unwanted rattling or vibration, molded rubber gasket and 10.55 square inches of reflective material standard per step. The step shall have a wide grip knurled handle for non slip gripping with gloved hand. The step shall have automotive grade chrome plating with selective texturing providing corrosion resistance with an enhanced image.

The step shall have user friendly Truck-lite lamp with high impact polycarbonate lens.

One handrail shall be installed (as applicable) in compliance with current NFPA. The handrail shall be constructed of 6063T5 1.25" OD anodized aluminum tube, with an integral ribbed surface to assure a good grip for personnel safety, mounted between chrome stanchions.

### **Body Mainframe**

The body mainframe shall be entirely constructed of aluminum. The complete framework shall be constructed of 6061T6 and 6063T5 aluminum alloy extrusions welded together using 5356 aluminum alloy welding wire.

The body mainframe shall include 3" x 3" 6061-T6 aluminum 3/8" wall cross member extrusion or 3" x 3" I-beam section aluminum extrusion depending on the application at the front of the body. A solid 3" x 3" "I-beam" section aluminum extrusion shall be provided the full width of the body forward and rearward of the rear wheel well. The cross members shall be designed to support the compartment framing and shall be welded to 1-3/16" x 3" solid 6063-T5 aluminum frame sill extrusions. The frame sill extrusions shall be shaped to contour with the chassis frame rails and shall be protected from contact with the chassis frame rails by 5/16" x 2" fiber-reinforced rubber strips to prevent wear and galvanic corrosion caused when dissimilar metals come in contact.

### **Body Mounting System**

The main body shall be attached to the chassis frame rails with six of 5/8" diameter steel U-bolts. The rear of the body shall be spring mounted to allow for chassis flex. This body mounting system shall be used to allow easy removal of the body for major repair or disassembly.

### **Water Tank Mounting System**

The body design shall allow the booster tank to be completely removable without disturbing or dismounting the apparatus body structure. The water tank shall rest on top of a 3" x 3" frame assembly covered with rubber shock pads and corner braces formed from 3/16" angled plate to support the tank. The booster tank mounting system shall utilize a floating design to reduce stress

from road travel and vibration. To maintain low vehicle center of gravity the water tank bottom shall be mounted within 5" of the frame rail top.

### **Hose bed Side Assembly**

The hose bed side assemblies shall be made of 3" x 3" slotted aluminum extrusion and 3/16" (.188") smooth plate. The hose bed side assemblies shall provide a 90" high body.

The exterior hose bed side surface shall be completely sanded and de-burred to assure a smooth finish and painted job color. The interior hose bed side surface shall be completely sanded and de-burred to assure a smooth sanded finish.

### **Rub rail**

The pump area module(s) and body shall have rub rails mounted along the sides and at the rear.

The rub rail shall be C-channel in design and constructed of 3/16" thick 6463T6 anodized aluminum extrusion. The rub rail shall be 2.75" high x 1.25" deep and shall extend beyond the body width to protect compartment doors and the body side. The rub rail depth shall allow marker and/or warning lights to be recessed inside for protection.

The top surface of the rub rail shall have minimum of five raised serrations. Each serration being a minimum of .1" in height and with cross grooves to provide a slip-resistant edge for the tailboard step and pump module running board areas. The rub rail shall be mounted a minimum of 3/16" off the pump module and body with nylon spacers. The ends of each section shall be provided with a finished rounded corner piece.

### **Fuel Fill**

A recessed fuel fill shall be provided at the driver side rear wheel well area.

### **Hose bed**

The hose bed shall have an NFPA required cubic foot capacity.

The area above the booster tank shall have a hose storage area provided. The hose bed shall be constructed entirely from maintenance-free, 3/4" deep x 7.5" wide, extruded aluminum slats that shall be pop-riveted into a one-piece grid system. Each slat shall have all sharp edges removed and have an anodized ribbed top surface that shall prevent the accumulation of water and allow for ventilation of wet hose.

The hose bed shall include an open area for the fill tower(s). The hose bed design shall incorporate adjustable tracks in the forward area rearward of the fill tower(s) and the rearward area of the hose bed for the installation of an adjustable divider(s). The adjustable tracks shall hold an adjustable divider(s) mounting nut straight, so only a Philips head screwdriver is required to adjust a divider(s) from side to side.

The hose bed shall be easily removable to allow access to the booster tank below.



## **Hose bed Divider**

There shall be one hose bed divider provided the full fore-aft length of the hose bed.

The hose bed divider shall be constructed of 1/4" smooth aluminum plate with an extruded aluminum base welded to the bottom. The rear end of the divider shall have a 3" radius corner to protect personnel. The divider shall be natural finish aluminum and shall be sanded and de-burred to prevent damage to the hose.

The divider shall be adjustable from side to side in the hose bed to accommodate varying hose loads.

## **Hose bed Divider Hand Hold**

There shall be a hand hole cutout on the trailing edge of each hose bed divider. The cutout is specifically sized for use in adjusting of the hose bed divider.

## **Body Wheel Well**

The body wheel well frame shall be constructed from 6063-T5 aluminum extrusion with a slot the full length to permit an internal fit of 1/8" aluminum tread plate. The wheel well trim shall be constructed from 6063-T5 formed aluminum extrusion. The wheel well liners shall be constructed of a 3/16" composite material. The liners shall be bolt-on and shall provide a maintenance-free and damage-resistant surface.

## **Rear Mud Flaps**

The rear tires shall have a set of black mud flaps mounted behind the rear chassis wheels with reflective logo.

## **Recessed Traffic Advisor Mount**

An area at the rear of the body shall be provided for recess mounting of a traffic advisor. The recess shall reduce the opening height(s) of the rear compartment(s).

## **Wheel Well SCBA Storage**

The body wheel well area shall store up to seven SCBA bottles- four on the officer side and three on the driver side. The bottles shall be secured in each storage area by a vertically hinged door which shall be secured in the closed position by a push button latch. The doors shall match the wheel well area material and finish.

## **Pump System**

The pump shall be a mid ship mounted Hale QMAX 1500 GPM single stage centrifugal pump. The pump shall be mounted on the chassis frame rails and shall be split-drive driven.

The entire pump body and related parts shall be of fine grain alloy cast iron, with a minimum tensile strength of 30,000 PSI. All metal moving parts in contact with water shall be of high quality bronze or stainless steel. Pump body shall be horizontally split in two sections for easy removal of impeller assembly, including wear rings and bearings from beneath the pump without disturbing pump mounting or piping.

The pump impeller shall be hard, fine grain bronze of the mixed flow design and shall be individually ground and hand balanced. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wrap-around double labyrinth design for maximum efficiency.

The pump shaft shall be heat-treated corrosion-resistant stainless steel and shall be rigidly supported by three bearings for minimum deflection. The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure-balanced to exclude foreign material. The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and shall be splash-lubricated. Pump shaft shall be sealed with double-lip oil seal to keep road dirt and water out of the gearbox.

Two 6 diameter suction ports with 6 NST male threads and removable screens shall be provided. The ports shall be mounted one on each side of the mid ship pump and shall extend through the side pump panels. Inlets shall come equipped with long-handle chrome caps.

A three year pump warranty shall be provided as standard by Hale Products.

### **Packing Seal**

The pump shaft shall have only one packing gland located on the inlet side of the pump. It shall be of split design for ease of repacking. The packing gland shall be of a design to exert uniform pressure on packing and to prevent cocking and uneven packing load when tightened. The packing rings shall be permanently lubricated, of graphite composition, and have sacrificial zinc foil separators to protect the pump shaft from galvanic corrosion.

The packing shall be easily adjusted by hand with rod or screwdriver with no special tools or wrenches required.

### **Priming System**

The electrically driven priming pump shall be a positive displacement vane type. One priming control, located at the pump operator's position, shall open the priming valve and start the priming motor. The primer shall be oil less type. The priming valve shall be electronically interlocked to the Park Brake circuit to allow priming of the pump before the pump is placed in gear.

### **Pump Shift**

The pump shift shall be pneumatically-controlled using a power shifting cylinder.

The power shift control valve shall be mounted in the cab and be labeled PUMP SHIFT. The apparatus transmission shift control shall be furnished with a positive lever, preventing accidental shifting of the chassis transmission.

A green indicator light shall be located in the cab and be labeled PUMP ENGAGED. The light shall

not activate until the pump shift has completed its full travel into pump engagement position.

A second green indicator light shall be located in the cab and be labeled OK TO PUMP. This light shall be energized when both the pump shift has been completed and the chassis automatic transmission has obtained converter lockup (4th gear lockup).

One pump panel-mounted GREEN indicator light shall be positioned by the throttle control on the pump operator's panel. The light shall be energized when the pump shift has been completed, chassis automatic transmission has obtained converter lockup (4th gear lockup), and the chassis parking brake is set.

### **Gearbox Cooler**

A gearbox cooler shall be provided to maintain safe operating temperatures during prolonged pumping operations.

### **Test Plugs**

Two test plugs shall be pump panel-mounted for third party testing of vacuum and pressures of the pump.

### **Auxiliary Engine Cooler**

An engine cooler used to lower engine water temperature during prolonged pumping operations and controlled at the pump operator's panel shall be provided.

The engine cooler shall be installed in the engine coolant system in such a manner as to allow cool pump water to circulate around engine water, thus forming a true heat exchanger action. Cooler inlet and outlet shall be continuous, preventing intermixing of engine coolant and pump water.

### **Pump Certification**

The pump, when dry, shall be capable of taking suction and discharging water in accordance with current NFPA 1901. The pump shall be tested at the manufacturer's facility by an independent, third-party testing service. The conditions of the pump test shall be as outlined in current NFPA 1901.

The tests shall include, at a minimum, the pump test, the pumping engine overload test, the pressure control system test, the priming device tests, the vacuum test, and the water tank to pump flow test as outlined in current NFPA 1901.

A piping hydrostatic test shall be performed as outlined in current NFPA 1901.

The pump shall deliver the percentage of rated capacities at pressures indicated below:

- 100% of rated capacity at 150 psi net pump pressure
- 100% of rated capacity at 165 psi net pump pressure
- 70% of rated capacity at 200 psi net pump pressure
- 50% of rated capacity at 250 psi net pump pressure

A test plate, installed at the pump panel, shall provide the rated discharges and pressures together with the speed of the engine as determined by the certification test, and the no-load governed speed of the engine.

A Certificate of Inspection certifying performance of the pump and all related components shall be provided at time of delivery. Additional certification documents shall include, but not limited to, Certificate of Hydrostatic Test, Electrical System Performance Test, Manufacturer's Record of Pumper Construction, and Certificate of Pump Performance from the pump manufacturer.

## **Steamers**

The pump 6" Steamer/Intake(s) shall be mounted approximately 1" from the pump panel to back of cap when installed.

Location: driver's side, officer's side

## **Intake 2.5 Top Mount Control**

One 2 1/2" suction inlet with a manually operated 2 1/2" Akron valve shall be provided on the driver side pump panel.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The outlet of the valve shall be connected to the suction side of the pump with the valve body located behind the pump panel. The valve shall come equipped with a brass inlet strainer, 2 1/2" NST female chrome inlet swivel and shall be equipped with a chrome-plated, rocker-lug plug with a retainer device.

The valve shall be controlled by a vertically mounted quarter turn locking handle located on the top mounted operator's panel and shall visibly indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance, and decreased friction loss.

A 3/4" bleeder valve assembly will be installed on the side pump panel.

## **Right Intake 2.5**

One 2-1/2" gated suction inlet with a manually operated Akron valve shall be installed in the right side pump panel with the valve body behind the panel. The valve control shall be located at the intake and shall visually indicate the position of the valve at all times.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self locking ball feature

using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The outlet of the valve shall be connected to the suction side of the pump with the valve body located behind the pump panel. The valve shall come equipped with a brass inlet strainer, 2-1/2" NST female chrome inlet swivel and shall be equipped with a chrome-plated, rocker-lug plug with a retainer device.

All fabricated piping shall be a minimum of Schedule 10 stainless steel.

A 3/4" bleeder valve assembly will be installed on the right side pump panel.

### **Hale Intake Relief Valve**

The pump shall be equipped with a Hale stainless steel, variable pressure setting suction side relief valve. It shall be designed to operate at a maximum inlet pressure of 200 psi. The valve shall be normally closed and shall limit pressures in the pumping system. When excessive intake pressures are received, the water shall be directed below the body to an area visible to the pump operator. The outlet shall terminate with a male 2-1/2" NPT threaded fitting.

### **Front Jumphline**

One 1-1/2" preconnect outlet with a manually operated Akron valve shall be supplied to the extended front bumper. The preconnect shall consist of a 2" heavy-duty hose coming from the pump discharge manifold to a 2" FNPT x 1-1/2" MNST mechanical swivel hose connection to permit the use of the hose from either side of the apparatus.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats for ease of operation and increased abrasion resistance. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

An air blowout valve shall be installed between the chassis air reservoir and the front jump line. The control shall be installed on the pump operator's panel.

The discharge shall be supplied with a Class 1 automatic 3/4" drain valve assembly. The automatic drain shall have an all-brass body with stainless steel check assembly. The drain shall normally be open and automatically close when the pressure is greater than 6 psi.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel for superior corrosion resistance and decreased friction loss.

There shall be a brass swivel provided for the front bumper discharge located in hose tray center front bumper centered on lower back wall.

### **1.5 Single Crosslay**

Two cross-lay discharges shall be provided at the front area of the body. The individual cross-lays shall include one 2" brass swivel with a 1-1/2" hose connection to permit the use of hose from either side of the apparatus.

The cross lay hose bed shall consist of a 2" heavy-duty hose coming from the pump discharge manifold to the 2" swivel. The hose shall be connected to a manually operated 2" Akron valve. The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel.

Location: cross lay 1 & 2

### **Single Cross lay 2.5**

One single cross lay discharge shall be provided at the front area of the body. The cross lay shall have one 2-1/2" mechanical swivel hose connection to permit the use of the hose from either side of the apparatus.

The cross lay hose bed shall consist of a 2.5" heavy-duty hose coming from the pump discharge manifold to the 2.5" swivel. The hose shall be connected to a manually operated 2.5" Akron valve. The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The valve control shall be located at the pump operator's panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel.

Location: cross lay 3

### **Discharge Left Panel 2.5**

Two 2-1/2" discharge outlet with a manually operated Akron valve shall be provided at the left hand side pump panel.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats. The valve shall have a self locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position and water is flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

The discharge shall extend out beyond the pump panel with a chrome-plated 30 degree downward angle with chrome-plated 2-1/2" NST threads to help prevent kinking of the discharge hose. The 30 degree droop shall be an integral part of the discharge valve and shall be equipped with a chrome-plated rocker-lug cap with a retainer chain.

The discharge shall be supplied with a 3/4" bleeder valve assembly. The bleeder valve shall be installed to drain water from the gauge pressure line to prevent freezing of the line. The drain shall be controlled with a quarter-turn valve on the pump panel.

All fabricated piping shall be a minimum of Schedule 10 stainless steel.

Location: left side discharge 1, left side discharge 2

### **Right Panel 2.5 Discharge**

Two 2-1/2" discharge outlets with a manually operated Akron valve shall be provided at the right side pump panel.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel.

Location: right panel discharge 1, right side discharge 2

### **Left Rear 2.5 Discharge**

One 2-1/2" discharge outlet with a manually operated Akron valve shall be supplied to the left rear of the apparatus by a 2-1/2" stainless steel pipe.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel.

Location: left rear discharge

### **Deck Gun 3 Discharge**

One 3” deck gun discharge outlet with a manually operated Akron valve and 3” stainless steel pipe shall be provided above the pump compartment.

The valve shall be an Akron 8800HD series with a 316 stainless steel ball and dual polymer seats. The valve shall have a self-locking ball feature using an automatic friction lock design to balance the stainless steel ball when in a throttle position with water flowing through it.

The valve shall be of the unique Akron Swing-out design to allow the valve body to be removed for servicing without disassembling the plumbing.

The valve shall be equipped with a device that limits the opening and closing speeds to comply with the current edition of NFPA1901.

The valve control shall be located at the pump operator panel and shall visually indicate the position of the valve at all times.

All fabricated piping shall be a minimum of Schedule 10 stainless steel.

### **Bleeder Drain Valve**

The specified discharge shall be supplied with a 3/4” bleeder valve assembly. The bleeder valve shall be installed to drain water from the gauge pressure line to prevent freezing of the line. The drain shall be controlled with a quarter-turn valve on the pump panel.

Plumbed to: front bumper discharge, left rear discharge, deck gun, crosslay preconnect, left discharge, right discharge

### **Pressure Governor**

The apparatus shall be equipped with a Class 1 engine/pump pressure governor/throttle system connected directly to the Electronic Control Module (ECM) mounted on the engine. The governor shall control and monitor the pump master discharge pressure, eliminating any need for a relief valve on the discharge side of the pump. A special preset feature shall permit a predetermined pressure or RPM to be set and hold it against varying flow rates at independent discharge lines by modulating engine rotation speed. Control of the engine speed shall be dictated by preprogrammed software in the electronic control module. The preset shall be easily adjustable by the operator.

The Class 1 system shall be installed in place of the discharge relief valve and the pump panel mounted hand throttle.



A display/control unit shall be mounted on the pump operator's panel. The control unit shall be a self-contained, weatherproof module, approximately 4.5"W x 6"H. The display unit shall provide alpha-numeric display.

### **Enfo IV System**

The apparatus shall be equipped with a Class 1 Enfo IV electronic system and engine operating information display/warning system mounted on the pump operator's panel. The gauge shall be a self-contained, weatherproof display, approximately 4.5"H x 6"W.

Features:

- Engine RPM - engine RPM shall be displayed numerically.
- System voltage display and alarm - a display shall be provided to indicate voltage and an audible alarm warning of low voltage. If the system voltage drops below 11.9 volts (12V ignition), or below 23.8 volts (24V ignition), for more than 2 seconds the audible alarm shall activate and shall cause the display to alternate between the current value and "LO" to warn the operator.
- Engine temperature display and alarm - a display shall be provided to indicate engine temperature and an audible alarm warning of high engine temperature. If the engine temperature reaches 250 degrees F or higher the audible alarm shall activate and the display shall alternate between the current temperature and "HI" to warn the operator.
- Engine oil pressure display and alarm - a display shall be provided to indicate oil pressure and an audible alarm warning of low oil pressure. If the oil pressure drops to 10 PSI or lower the audible alarm shall activate and the display shall alternate between the current pressure and "LO" to warn the operator.

The connection to the apparatus shall be achieved by the use of a Deutsche four (4) position socket connector.

### **Tank Level Gauge**

One Class 1 brand Intelli-Tank™ water tank level gauge shall be located at the pump operator's panel of the apparatus to provide wide angle viewing and a high-visibility display of the water tank level. Four ultra-bright LED's (light emitting diodes) on the display module allow the full, 3/4, 1/2 and refill levels to be easily distinguished at a glance.

The long life and extreme durability of LED indicators eliminates light bulb replacement and maintenance. Color coded cover plates shall complete the assembly of the display module.

The system shall calibrate to any size and shape of tank and has a built-in diagnosis feature. It comes complete with an industrial pressure transducer, which will provide nine accurate levels of indications. Each display also has a programmable night dimming feature.

### **Tank Level Gauge**

One Class 1 brand Intelli-Tank™ foam tank level gauge shall be located at the pump operator's

panel of the apparatus to provide wide angle viewing and a high-visibility display of the foam tank level. Four ultra-bright LED's (light emitting diodes) on the display module allow the full, 3/4, 1/2 and refill levels to be easily distinguished at a glance.

The long life and extreme durability of LED indicators eliminates light bulb replacement and maintenance. Color coded cover plates shall complete the assembly of the display module.

The system shall calibrate to any size and shape of tank and has a built-in diagnosis feature. It comes complete with an industrial pressure transducer, which will provide nine accurate levels of indications. Each display also has a programmable night dimming feature.

### **Compound Pressure Gauge**

A Class 1 weatherproof 2-1/2" compound vacuum pressure gauge with a range of 30-0-600 shall be installed on the pump panel. The gauge shall be filled with a liquid solution to assure visual reading to within 1% accuracy.

Gauge shall be provided for the following discharge: front bumper discharge, left rear discharge, 1.5 in. cross lay pre-connect, 2.5 in. cross lay pre-connect, deck gun, left side discharge 1, left side discharge 2, right side discharge 1, right side discharge 2

### **Compound Pressure Gauges**

A Class 1 weatherproof 4-1/2" compound vacuum pressure gauge with a range of 30-0-600 shall be installed on the pump panel. The gauge shall be filled with a liquid solution.

### **Foam System**

A 12-volt DC powered variable-speed electronic direct-injection foam-concentrate proportioning system with a 2.1-gpm-foam concentrate pump shall be integrated into 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 1/2-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.

The inlet of this stainless steel manifold/double check-valve assembly will be connected to the fire pump, and the outlet connected to the foam capable discharge outlet(s) on the fire apparatus, as specified. The flow sensor/stainless-steel foam manifold combination shall be capable of water or foam solution flow rates of 30- to 750-gpm.

The foam proportioning system shall be equipped with a panel mounted digital display control unit with a microprocessor that monitors total water flow and foam concentrate pump output to provide the operator preset proportional amount of foam concentrate injected on the discharge side of the fire pump. Total foam concentrate pump concentrate output shall be 2.1 gallons per minute. Proportioning rate is push-button set by the pump operator on the digital display from 0.1% to 1%, in 0.1% increments.

The digital display panel mounted electronic operator control unit shall provide concentrate injection readout in tenths of a percent while also being able to read water flow, total water flowed and total amount of foam concentrate used. The control shall flash a warning indicating low concentrate in the reservoir to the operator, and shall be able to shut off the concentrate pump to prevent damage to the pump. A bar graph on the control unit shall provide visual indication of system operating capacity and will indicate when capacity is exceeded.

Foam concentrate-proportioning systems that do not have the above panel mounted digital display informational features will not be accepted.

The foam concentrate pump shall be fed concentrate by a non-metallic housing foam concentrate strainer that is equipped with a service shut-off valve.

The unit will be fed 12-volt DC power from the apparatus electrical system, and be equipped with a chassis frame ground strap, per the foam proportioner manufacturer's installation and operating instruction manual.

### **Foam System Plumbing**

The foam system shall be located in pump module area. It shall provide foam for 1.5" Double Cross lay, 1.5" Front Bumper, and 2.5" cross lay pre-connect.

### **Multiplex Electrical System**

The following specifications describe the low voltage electrical system on the specified fire apparatus. The electrical system shall include all panels, electrical components, switches, and relays, wiring harnesses and other electrical components. The electrical equipment installed by the apparatus manufacturer shall conform to current automotive electrical system standards, the latest Federal DOT standards, and the requirements of the applicable NFPA #1901 standards.

The apparatus shall have a multiplexing system to provide diagnostic capability. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The electrical system shall be pre-wired for computer modem accessibility to allow service personnel to easily plug in a modem to allow remote diagnostics, troubleshooting, or program additions.

For superior system integrity, the networked system shall meet the following minimum requirement components:

- Power management center
- Load shedding power management
- Solid-state circuitry
- Switch input capability
- Responsible for lighting device activation
- Self-contained diagnostic indicators
- Power distribution module.

All wiring shall be stranded copper or 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. The wiring and wiring harness and

insulation shall be in conformance to applicable SAE and NFPA standards. The wiring harness shall conform to SAE J-1128 with GXL temperature properties. All exposed wiring shall be run in a loom with a minimum 289 degree Fahrenheit rating. All wiring looms shall be properly supported and attached to body members. The electrical conductors shall be constructed in accordance with applicable SAE standards, except when good engineering practice requires special construction.

The wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection and shall be installed in accordance with the device manufacturer's instructions. Electrical connections shall be with mechanical type fasteners and large rubber grommets where wiring passes through metal panels.

The wiring between the cab and body shall be split using Deutsche type connectors or enclosed in a terminal junction panel area. This system will permit body removal with minimal impact on the apparatus electrical system. All connections shall be crimp-type with heat shrink tubing with insulated shanks to resist moisture and foreign debris such as grease and road grime. Weather-resistant connectors shall be provided throughout to ensure the integrity of the electrical system.

Any electrical junction or terminal boxes shall be weather-resistant and located away from water spray conditions. In addition, the main body junction panel shall house the automatic reset breakers and relays where required.

There shall be no exposed electrical cabling, harnesses, or terminal connections located in compartments, unless they are enclosed in an electrical junction box or covered with a removable electrical panel. The wiring shall be secured in place and protected against heat, liquid contaminants, and damage. Wiring shall be uniquely identified at least every two feet by color coding or permanent marking with a circuit function code and identified on a reference chart or electrical wiring schematic per requirements of applicable NFPA #1901 standards.

The electrical circuits shall be provided with low voltage over-current protective devices. Such devices shall be accessible and located in required terminal connection locations or weather-resistant enclosures. The over-current protection shall be suitable for electrical equipment and shall be automatic reset type and meet SAE standards. All electrical equipment, switches, relays, terminals, and connectors shall have a direct current rating of 125 percent of maximum current for which the circuit is protected. The system shall have electro-magnetic interference suppression provided as required in applicable SAE standards.

The electrical system shall include the following:

- A. Electrical terminals in weather exposed areas shall have a non-conductive grease or spray applied. A corrosion preventative compound shall be applicable to all terminal plugs located outside of the cab or body.
- B. The electrical wiring shall be harnessed or be placed in a protective loom.
- C. Heat shrink material and sealed connectors shall be used to protect exposed connections.
- D. Holes made in the roof shall be caulked with silicone. Large fender washers shall be used when fastening equipment to the underside of the cab roof.

- E. Any electrical component that is installed in an exposed area shall be mounted in a manner that will not allow moisture to accumulate in it.
- F. A coil of wire shall be provided behind an electrical appliance to allow them to be pulled away from mounting area for inspection and service work.
- G. All lights that have their sockets in a weather exposed area shall have corrosion preventative compound added to the socket terminal area.

The warning lights shall be switched in the chassis cab with labeled switching in an accessible location. Individual rocker switches shall be provided only for warning lights provided over the minimum level of warning lights in either the stationary or moving modes. All electrical equipment switches shall be mounted on a switch panel mounted in the cab convenient to the operator. For easy nighttime operation, an integral indicator light shall be provided to indicate when the circuit is energized. All switches shall be appropriately identified as to their function.

A single warning light switch shall activate all required warning lights. This switch will allow the vehicle to respond to an emergency and “call for the right of way”. When the parking brake is activated, a “blocking right of way” system shall be automatically activated per requirements of NFPA #1901. All “clear” warning lights shall be automatically shed on actuation of parking brake.

### **NFPA Required Testing of Electrical System**

The apparatus shall be electrical tested upon completion of the vehicle and prior to delivery. The electrical testing, certifications, and test results shall be submitted with delivery documentation per requirements of NFPA #1901. The following minimum testing shall be completed by the apparatus manufacturer:

#### 1. Reserve capacity test:

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test fail.

#### 2. Alternator performance test at idle:

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

#### 3. Alternator performance test at full load:

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of two (2) hours. Activation of the load management system shall be permitted during this test. However, an alarm sounded by excessive battery discharge, as detected by the system required in NFPA #1901 Standard, or a system voltage of less than 11.7 volts dc for a 12 volt nominal system, for more than 120 seconds, shall be considered a test failure.

#### 4. Low voltage alarm test:

Following the completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts dc for a 12 volt nominal system shall be considered a test failure. The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

### **NFPA Required Documentation**

The following documentation shall be provided on delivery of the apparatus:

- A. Documentation of the electrical system performance tests required above.
- B. A written load analysis, including:
  - The nameplate rating of the alternator
  - The alternator rating under the conditions
  - Each specified component load
  - Individual intermittent loads.

### **Multiplex Modem Kit**

A kit shall be supplied to include modem, adapter for PDA device/laptop computer interface and adapter harness. The diagnostic hookup shall be located under the officer's side dash.

### **Multiplex Data Logger**

The data logger shall record historical faults within the multiplex system and be accessible through the diagnostic software as well as the information center.

### **Light Bar**

A Federal Signal JLX6001C 60" LED JetStream light bar shall be installed with clear domes. The light bar shall contain six SOL 9 Red LED Solaris reflectors, and three SOL 6 red LED Solaris reflectors.

The lightbar(s) shall be installed in the following location: Centered on the front cab roof.

### **Lower Level Warning**

Eight Federal Signal QL64XF-R LED light heads and two Federal Signal Model 3300-04 LED light heads all with red lens shall be provided.

The light heads shall be mounted as close to the corner points of the apparatus (as is practical) as follows:

- Two QL64XF-R light heads on the front of the apparatus facing forward
- Two QL64XF-R light heads on the rear of the apparatus facing rearward
- Two QL64XF-R light heads each side of the apparatus, one each side at the forward most point and one centrally located to provide mid ship warning lighting
- Two Model 3300-04 LED light heads shall be mounted one each side at the rearward most point (as practical).

The side facing lights shall be located at forward most position, centered in rear wheel well, and side facing at rear of body in rub rail if equipped.

All warning devices shall be surface mounted in compliance with NFPA standards.

## **Flashers**

One Intelli-flash series flashers shall be provided.

## **Lower Level LED Warning Light Flash Rate**

The lower level Federal Signal Quadraflare LED warning lights shall be set to flash at an alternating 75 quad flashes per minute.

## **Upper Rear Warning Lights**

Two Federal Signal Sentry Model SY12FS rotating lights with a polycarbonate base, a single 55-watt halogen lamp, and a twist-on lexan dome. Each light shall produce 175 flashes per minute. The dome colors to be driver red, officer amber.

The lights shall be located rear upper body on aerial style brackets to meet Zone C upper requirements.

## **Directional Traffic Warning Light**

A Federal SML-6 Signal Master light bar with amber lens shall be installed at rear of the apparatus. The unit shall include a total of six LED (light Emitting Diode) modules. Four operating modes are available: left arrow, right arrow, split (center out) and flashing warn pattern. A Federal SMC-56 control shall be provided with LED indicators to emulate the warning pattern.

Light bar dimensions: 31.50" Long X 3.50" Deep X 3.00" High

## **Directional Light Bar Control Location**

The directional light bar control head shall be located in the center overhead.

## **Electronic Siren**

A Federal PA300 siren model 690010 solid state electronic siren with attached noise-canceling microphone shall be installed. The unit shall be capable of driving a single high power speaker up to 200 watts to achieve a sound output level that meets Class "A" requirements.

Operating modes shall include Hi-Lo, yelp, wail, P.A., air horn, and radio re-broadcast.

The siren shall be recessed mounted in the cab.

## **Electronic Siren Control Location**

The electronic siren control shall be located in the center overhead console offset to driver side.

## **Mechanical Siren**

A chrome plated and exterior mounted Federal Q2B-P coaster siren shall be installed on top of the front bumper extension. An electric siren brake switch shall be located on the main cab switch panel.

The siren shall be located driver side front bumper.

## **Speaker**

One Federal model MS100 Dynamax 100 watt speaker shall be flush-mounted as far forward and as low as possible on the front of the cab. A polished Model MSFMT-EF "Electric F" grille shall be provided on the outside of the speaker to prevent road debris from entering the speaker.

Speaker dimensions shall be: 5.8 in. high x 5.8 in. wide x 2.6 in. deep. Weight = 5.5 lbs.

The speaker shall produce a minimum sound output of 120 db (A) at 10 feet to meet current NFPA 1901 requirements.

The speaker shall be located driver side front bumper, officer side front bumper.

## **LED Marker Lights**

Trucklite LED clearance/marker lights shall be installed as specified.

### **Upper Cab:**

- Five amber LED clearance lights on the cab roof.

### **Lower Cab:**

- One amber LED side turn/marker each side of cab ahead of the front door hinge.

### **Upper Body:**

- One red LED clearance light each side, rear of body to the side.

### **Lower Body:**

- Three red LED clearance lights centered at rear, recessed in the rub rail
- One red LED clearance light each side at the trailing edge of the apparatus body, recessed in the rub rail
- One amber LED clearance/auxiliary turn light each side front of body, recessed in the rub rail.

## **License Plate Light**

One Truck-Lite Model 15205 white LED license plate light mounted in a Truck-Lite Model 15732 chrome-plated plastic license plate housing shall be mounted at the rear of the body.

## **Tail Lights**

One Federal Signal model QL64Z-BTT red L.E.D. (Light Emitting Diode) light, one Federal Signal model QL64Z-ARROW amber LED light and one Federal Signal QL64Z-BACKUP white LED light shall be installed in a Cast 3 housing in a vertical position each side at rear and wired with weatherproof connectors.

Light functions shall be as follows:



- LED red running light with red brake light in upper position
- LED amber populated arrow pattern turn signal in middle position
- LED white backup light in lower position.

A one-piece polished aluminum trim casting shall be mounted around the three individual lights in a vertical position.

### **Compartment Light**

There shall be a minimum of one 4” circular single light bulb mounted in each body compartment greater than 4 cu ft. Compartments over 36” in height shall have a minimum of two lights, one high and one low. Transverse compartments shall have a minimum of two lights, located one each side.

Compartment lights shall be wired to a master on/off rocker switch on the cab switch panel. Each light shall be in a resilient shock-absorbent mount for improved bulb life.

The wiring connection for the compartment lights shall be made with a weather-resistant plug in style connector. A single water and corrosion resistant switch with a polycarbonate actuator and sealed contacts shall control each compartment light. The switch shall allow the light to illuminate if the compartment door is open.

### **Ground Lights**

The apparatus shall be equipped with a sufficient quantity of lights to properly illuminate the ground areas around the apparatus in accordance with current NFPA requirements. The lights shall be 4” circular with clear lenses mounted in a resilient shock absorbent mount for improved bulb life. The wiring connections shall be made with a weather-resistant plug in style connector.

Ground area lights shall be switched from the cab dash with the work light switch.

One ground light shall be supplied under each side of the front bumper extension if equipped.

Lights in areas under the driver and crew area exits shall be activated automatically when the exit doors are opened.

### **Deck Lights**

Two Unity model AGS4413 6” chrome-plated 12-volt, 35-watt floodlights shall be installed at the rear of the apparatus. Each light shall be manually operated by an on/off switch at the light.

Location: rear body/beavertail area on the trailing edge up high

### **Hose bed Light**

A Truck-Lite rectangular light shall be installed at the front area of the hose bed to provide hose bed lighting per current NFPA 1901. The rectangular rubber housing shall contain a 12-volt 2700 candlepower halogen floodlight bulb. The hose bed light shall be switched with work light switch in the cab.

### **Scene Lights**

Two Federal GHSCENE lights with clear lenses shall be provided. Each light shall include two 20

watt halogen fixtures within the light housing. Both lights, within each housing, shall be adjustable horizontally and vertically to provide desired coverage. All electrical connectors are to be enclosed in the housing providing protection against the elements.

The light shall be 12VDC, 40 watts, and provide 1050 candelas.

Lights shall be located one each side of cab, rearward of forward doors, up high and switch in cab (side facing lights switched separately).

### **Engine Compartment Light**

There shall be lighting provided in compliance with NFPA to illuminate the engine compartment area.

### **Pump Compartment Light**

An incandescent light shall be provided in the pump compartment area for NFPA compliance. The light shall be wired to operate with the work light switch in the cab.

### **Foot Switch**

A heavy-duty metal floor-mounted foot switch shall be installed to operate the air horns. It shall be located driver's side, officer's side.

A heavy-duty metal floor-mounted foot switch shall be installed to operate the Q2B audible warning device. It shall be located driver's side, officer's side.

### **Rocker Switch**

A 12 volt rocker switch shall be installed.

The switch shall be located officer's side overhead console for Q2B brake.

### **Back-up Alarm**

An electronic back-up alarm shall be supplied. The 97 dB (A) alarm shall be wired into the chassis back-up lights to signal when the vehicle is in reverse.

### **Breaker Panel**

A ten place breaker box with up to ten appropriately sized ground-fault interrupter circuit breakers shall be supplied. The breaker box will include a master breaker sized according to the generator output. The breaker box will be located in the specified compartment, not to exceed 12' run of wire.

Dimensions: 17.92" high x 14.25" wide x 3.75" deep.

Location: L1 forward wall.

### **(4) Quartz Lights**

A Kwik-Raze model 36 Magnafire quartz light head with 750-watt, 120-volt halogen bulb rated at

25,200 Lumens mounted on a Kwik-Raze model 900 top raising 40" aluminum telescopic pole with up indicator switch.

The light assembly shall be internally mounted in the body as specified. The pole shall allow for 360-degree rotation of the light. A locking knob shall hold the pole at the desired height.

Location: driver side of pump module rearward of TM control panel, officer side of pump module rearward of TM control panel, driver side of body/beavertail rearward, officer side of body/beavertail rearward

### **Receptacle (Qty 2)**

A 15 amp, 110-volt 3-prong straight blade, (NEMA #5-15) duplex receptacle with a weatherproof cover plate shall be installed as specified by the department.

Location: driver side rear compartment face down low, officer side rear compartment face down low

### **Electric Cord Reel**

Hannay electric cord reel (ECR 1616-17-18) shall be installed and located L3 offset rearward.

The reel(s) shall include 200' of black 10 gauges 3 conductor type SOWA cord. The cord shall be rated at 20 amps @ 110 volts. The end of the cord shall be terminated for the installation of a department required connector.

### **Cord Reel Rollers**

Stainless steel cord reel rollers shall be installed and located on the reel.

The rollers shall facilitate smooth removal of the electric cord.

### **Cord Reel Rewind Switch**

A heavy duty rubber covered electric reel rewind button shall be installed on wall near cord reel.

### **DOT Reflector Kit**

Three triangular warning reflectors with carrying case shall be supplied to satisfy the DOT requirement.

### **Cab Paint**

The apparatus cab shall be painted DuPont color L6572EG Red The paint shall be of the highest quality finish for low maintenance, long life, and attractive appearance. The finish shall consist of a corrosion resistant primer, urethane high build primer, and high performance durable color coat. The vehicle finish shall be protected with a minimum of 2 mils film thickness of UV resistant clear coat.

The paint process shall meet or exceed current State regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water, and soil. Manufacturer shall, upon demand, provide evidence that the manufacturing facility is in compliance with State EPA rules and regulations.

The cab exterior shall have no mounted components prior to painting to assure full coverage of metal treatments and paint. Any vertically or horizontally hinged smooth plate doors shall be painted separately to assure proper paint coverage on the cab, doorjambs, and door edges.

The paint process shall feature DuPont Performance Coatings high-solid, low VOC products and be performed in the following steps:

- Corrosion Prevention - all raw materials shall be pre-treated with the MetaLok-CVP system to provide superior corrosion resistance and excellent adhesion of the top coat
- DuPont Uro® Prime 1340S™ polyurethane primer shall be applied to guarantee excellent gloss hold-out, chip resistance, and barrier coat corrosion protection
- DuPont Imron® Elite Express System (Top coat) - a lead free, chromate-free, high-solids polyurethane color coat shall be applied. A minimum of two coats shall be applied providing excellent coverage and durability
- DuPont High Solids Clear coat TC35000™ - a high-solids, low VOC clear coat shall be applied as the final step. To ensure full gloss, color retention and durability a minimum of two coats shall be applied at 2 mils film thickness minimum.

Any location where a surface is penetrated after painting for the purpose of mounting steps, handrails, doors, lights, or other specified components shall be treated at the point of penetration with a corrosion inhibiting system. All hardware used in mounting steps, handrails, doors, lights, or other specified components shall be individually treated with the corrosion inhibiting system.

After the paint process is complete, the gloss rating of the unit shall be tested with a 20-degree gloss meter and distinction of image meter to assure a smooth mirror like finish.

### **Body Paint**

The apparatus body shall be painted DuPont color L6572EG Red. The paint shall be of the highest quality finish for low maintenance, long life, and attractive appearance. The finish shall consist of a corrosion-resistant primer, urethane high build primer, and high performance durable color coat. The vehicle finish shall be protected with a minimum of 2 mils film thickness of UV resistant clear coat.

The paint process shall meet or exceed current State regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water, and soil. Manufacturer shall, upon demand, provide evidence that the manufacturing facility is in compliance with State EPA rules and regulations.

The body exterior shall have no mounted components prior to painting to assure full coverage of metal treatments and paint. Any vertically or horizontally hinged smooth-plate compartment doors shall be painted separately to assure proper paint coverage on the body, doorjambs, and door edges.

The paint process shall feature DuPont Performance Coatings high-solid, low VOC products and be performed in the following steps:

- Corrosion Prevention - all raw materials shall be pre-treated with the MetaLok-CVP system to provide superior corrosion resistance and excellent adhesion of the top coat
- DuPont Uro® Prime 1340S™ polyurethane primer shall be applied to guarantee excellent gloss hold-out, chip resistance, and barrier coat corrosion protection
- DuPont Imron® Elite Express System (Top coat) - a lead free, chromate-free, high-solids polyurethane color coat shall be applied. A minimum of two coats shall be applied providing excellent coverage and durability

- DuPont High Solids Clear coat TC35000™- a high-solids, low VOC clear coat shall be applied as the final step. To ensure full gloss, color retention and durability a minimum of two coats shall be applied at 2 mils film thickness minimum.

Any location where the metal is penetrated after painting for the purpose of mounting steps, handrails, doors, lights, or other specified components shall be treated at the point of penetration with a corrosion inhibiting system. The system shall be applied to the sheet metal or extrusions in all locations where the metal has been penetrated. All hardware used in mounting steps, handrails, doors, lights, or other specified components shall be individually treated with the corrosion inhibiting system.

After the paint process is complete, the gloss rating of the unit shall be tested with a 20-degree gloss meter and distinction of image meter to assure a smooth mirror like finish.

### **Cab Interior Color**

The interior of the cab shall be painted with Zolatone 20-64.

### **Lettering**

Sixty 3" high Sign Gold letters with shade shall be applied as specified.

### **Chassis and Body Stripe**

A straight chassis and body Scotchlite stripe, 6" minimum in width shall be supplied. The stripe shall be NFPA compliant with the color and location to be specified by the purchaser.

Location: top of stripe flush with top of bumper and straight back

Color: White

### **Standard 1 Year Warranty**

The apparatus manufacturer shall provide a full one year standard warranty. All components manufactured by the apparatus manufacturer shall be covered against defects in materials or workmanship for a one year period. All components covered by separate suppliers such as engines, transmissions, tires, and batteries shall maintain the warranty as provided by the component supplier. A copy of the warranty document shall be provided with the proposal.

### **Lifetime Frame Warranty**

The apparatus manufacturer shall provide a full lifetime frame warranty. This warranty shall cover all apparatus manufacturer designed frame, frame members, and cross members against defects in materials or workmanship for the lifetime of the covered apparatus. A copy of the warranty document shall be provided with the proposal. Frame warranties that do not cover cross members for the life of the vehicle shall not be acceptable.

### **Ten Year 100,000 Mile Structural Warranty**

The apparatus manufacturer shall provide a comprehensive ten year/100,000 mile structural warranty. This warranty shall cover all structural components of the cab and/or body manufactured by the apparatus manufacturer against defects in materials or workmanship for ten years or 100,000

miles, whichever occurs first. Excluded from this warranty are all hardware, mechanical items, electrical items, or paint finishes. A copy of the warranty document shall be provided with the proposal.

### **Ten Year Stainless Steel Plumbing Warranty**

The apparatus manufacturer shall provide a full 10-year stainless steel plumbing components warranty. This warranty shall cover defects in materials or workmanship of apparatus manufacturer designed foam/water plumbing system stainless steel components for ten years. A copy of the warranty document shall be provided with the proposal.

### **Ten Year Paint and Corrosion Warranty**

The apparatus manufacturer shall provide a ten year limited paint and corrosion perforation warranty. This warranty shall cover paint peeling, cracking, blistering, and corrosion provided the vehicle is used in a normal and reasonable manner. Paint shall be prorated for ten years and corrosion perforation shall be covered 100% for ten years. The warranty period shall begin upon delivery of the apparatus to the original user-purchaser. A copy of the warranty document shall be provided with the proposal.

UV paint fade shall be covered in a separate warranty supplied by DuPont and shall be for a minimum of ten years.

### **Manuals**

Two copies of all operator, service, and parts manuals shall be supplied at the time of delivery in electronic format (CD-ROMs). The electronic manuals shall include the following information:

- Operating Instructions, descriptions, specifications, and ratings of the cab, chassis, body, installed components, and auxiliary systems
- Warnings and cautions pertaining to the operation and maintenance of the fire apparatus and fire fighting systems
- Charts, tables, checklists, and illustrations relating to lubrication, cleaning, troubleshooting, diagnostics, and inspections
- Instructions regarding the frequency and procedure for recommended maintenance
- Maintenance instructions for the repair and replacement of installed components
- Parts listing with descriptions and illustrations for identification
- Warranty descriptions and coverage.

The CD-ROM shall incorporate a navigation page with electronic links to the operator's manual, service manual, parts manual, and warranty information, as well as instructions on how to use the manual. Each copy shall include a table of contents with links to the specified documents or illustrations.

The CD Shall be formatted in such a manner as to allow not only the printing of the entire manual, but to also the cutting, pasting, or copying of individual documents to other electronic media, such as electronic mail, memos, and the like.

A find feature shall be included to allow for searches by text or by part number.

These electronic manuals shall be accessible from any computer operating system capable of supporting portable document format (PDF). Permanent copies of all pertinent data shall be kept file at both the local dealership and at the manufacturer's location.

**BID FORM**

Santa Rosa County Procurement Department  
6495 Caroline Street, Suite G  
Milton, Florida 32570

Date \_\_\_\_\_

Dear Sir:

The undersigned agrees to furnish the equipment as requested by you for Santa Rosa County in your invitation to bid and certifies that the equipment bid meets or exceeds the specifications called for, except as set out in "Exceptions to Bid Conditions" and attached to this form.

Make and Model of Equipment \_\_\_\_\_

Name & Address of Bidder \_\_\_\_\_

**Cash Bid Price FOB – Milton, Florida**

**Regular Pumper Truck**                      \$ \_\_\_\_\_

Specify Warranty Information \_\_\_\_\_

Delivery Date **Must** Be Specified \_\_\_\_\_

\_\_\_\_\_  
Company Representative Signature

\_\_\_\_\_  
Telephone

NOTE: Please return this bid form to the above address. NO OTHER BID FORM WILL BE ACCEPTED.

COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**SWORN STATEMENT UNDER SECTION 287.133 (3) (A),  
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES**

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted to \_\_\_\_\_

by \_\_\_\_\_  
(print individual's name and title)

for \_\_\_\_\_  
(print name of entity submitting sworn statement)

whose business address is \_\_\_\_\_

\_\_\_\_\_ and (if applicable) its Federal Employer  
Identification Number (FEIN) is \_\_\_\_\_. If the entity has no FEIN, include the  
Social Security Number of the individual signing this Sworn Statement: \_\_\_\_\_.

2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means:

1. A predecessor or successor of a person convicted of a public entity crime; or
2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of public entity crime.

5. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with legal power to enter into a binding contract and which bids or appeals to bid on contracts for the provision of goods and services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

6. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

\_\_\_\_\_ Neither the entity submitting this sworn statement, nor one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, nor any affiliate of the entity have been charged with and convicted of a public entity crime subsequent to July 1, 1989.

\_\_\_\_\_ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

\_\_\_\_\_ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However, there has been a subsequent proceeding before a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officers determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (ATTACH A COPY OF THE FINAL ORDER.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

(Signature) \_\_\_\_\_

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 2\_\_\_\_\_.

Personally known \_\_\_\_\_

or Produced identification \_\_\_\_\_ Notary Public – State of \_\_\_\_\_

\_\_\_\_\_ My commission expires \_\_\_\_\_

(Type of identification)

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(Printed, typed, or stamped commissioned name of notary public.)