

**NOTICE TO BIDDERS
EMS PUMPER TRUCK**

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

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MINIMUM SPECIFICATIONS EMS 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 the specifications is to describe the minimum quality acceptable. Any brand name and/or model number mentioned is intended to be descriptive and not restrictive to any bidder. Bidder must state the brand of any item provided which is a substitute for the brand or model specified for evaluation by the buyer. The buyer reserves the right to require a bidder to provide proof in each case that a substituted item is equal to that specified. The buyer shall be the sole judge in determination of acceptable substitutes. Each bidder shall make accurate statements in his documentation as to all principle dimensions and weight distribution of the fully loaded completed vehicle. 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.

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 provide detailed specifications on each item in the bid package. 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. A general arrangement drawing depicting the vehicle's appearance shall be provided. The drawing shall consist of left side, right side, front, and rear elevation views.

Bids shall be addressed and submitted in accordance with the instructions provided on the bid advertisement cover sheet. The words "Bid – EMS Pumper Truck", the date of the bid opening, and the time of the bid opening shall be stated on the front of the bid envelope.

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 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.

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 submitted details to compare the unit proposed with the specifications. All bid details are 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 bids 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 accepted.

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 bids, and to purchase the equipment it deems most suitable to its needs. The purchaser 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

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

It is not the intent of these specifications to eliminate any qualified bidder. Any vendor who feels that they offer a product which is equivalent to that specified is encouraged to note the exceptions and enter a bid. The buyer cannot consider your exceptions if you do not enter a bid. The buyer will evaluate each exceptions to determine whether it is acceptable as a substitute.

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. 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 bids that are found to have deviations without proper exceptions will be rejected. Bids taking general or total exception are not being solicited.

The apparatus will be inspected upon delivery for compliance with the specifications. Deviations will no 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, aerial and body manufacturers, bids 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 bid package, 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 bid.

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.

General Body Construction

As all material and equipment specified herein are available to all bidders, aluminum type apparatus are being solicited. Steel bodied type apparatus are not being called for and shall not be considered. The entire apparatus body, including sub-frame, will be constructed of aluminum.

The apparatus body must be of 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 is to be completely built, painted and installed by the prime body manufacturer, which minimizes third part 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 package.

Inspections Trips

During construction and at no cost to the buyer, the successful bidder shall make arrangements for four officials from the buying authority to make three visits, one for a pre-construction conference, one for a mid-point inspection, and one for a final inspection visit prior to delivery.

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"
- Material: Frame rail - 110,000-psi minimum yield strength, high strength, low alloy steel
- Section Modulus: 16.61 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 8.87" 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 and frame liners 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.

The apparatus manufacturer shall supply a full lifetime frame warranty including cross members against defects in materials or workmanship. Warranties that provide a lifetime warranty for only the frame rails, but not the cross members, are not acceptable.

The custom chassis shall have a wheel alignment in order to achieve maximum vehicle road performance and to promote long tire life. 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.

Frame Liner

A 9-3/8" x 3-1/8" x 3/8" channel frame liner shall be bolted to each frame rail for added strength and rigidity. Frame liners shall be made of 110,000-PSI minimum yield, high strength, low alloy steel. Each frame rail with liner shall have the following minimum characteristics:

- Section Modulus: 28.74 cu. in.
- RBM: 3,161,400 in. lbs.

The frame liners shall be inserted inside the open portion of the frame rails and shall run continuously from the rear of the frame to a point 42" in front of the front axle to provide maximum frame strength at all critical load points.

Bumper

The vehicle shall be equipped with a one-piece 10" high bumper, made from 10 gauge 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 and shall extend 28" forward of the front of the cab per customer specification to provide additional protection against low-speed frontal impacts.

The space between the bumper and the front of the cab shall be covered on the top and on each side with 1/8" aluminum diamond plate.

Bumper Trays

One hose tray constructed of 1/8" aluminum shall be recessed into the front bumper extension on the driver side. Aluminum slats shall be included in the bottom of the hose tray. The tray shall have the capacity to hold 100' of 1.75" double jacket hose.

One full depth compartment, to be of maximum size allowable, shall be located between the frame rails. One bulkhead mounted hydraulic coupling shall be mounted on the center of the rear wall of this tray, up high.

All compartments shall be equipped with plastic grating and drain holes in floors.

Each compartment shall have a single aluminum tread plate lid with quarter turn latch and gas-shock hold-open device.

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 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 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 ½" 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.

Front Axle and Suspension

The vehicle shall utilize an ArvinMeritor FL-943 5" drop beam front axle with a rated capacity of 20,000 lbs. It shall have "easy steer" knuckle pin bushings and 68.83" kingpin centers. The axle shall be of I-beam construction and utilize grease-lubricated wheel bearings. The front suspension shall be furnished with two Monroe heavy-duty, double-acting shock absorbers, one (1) on each side, for smooth ride and handling. 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 20,000 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 M110 integral power steering gear, used in conjunction with a power assist cylinder. The steering assembly shall be rated to statically steer a maximum front axle load of 20,000 lbs. Relief stops shall be provided to reduce system pressure upon full wheel cut. The system shall be able to operate mechanically should the hydraulic system fail.

A minimum five year/unlimited miles parts and three year labor front axle warranty shall be provided as standard by ArvinMeritor Automotive.

A minimum five year/unlimited miles parts and three year labor front brake warranty shall be provided as standard by ArvinMeritor Automotive. The warranty shall include bushings, seals, and cams.

Front Tires

The front tires shall be two Michelin 365/70R 22.5 tubeless type 18 PR radial tires with XZA highway tread.

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

- 21,000 lbs. @ 75 MPH.

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

Rear Axle and Suspension

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.

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 have a manufacturer's rated capacity of 27,000 lbs.

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

A minimum three year/unlimited miles parts rear brake warranty shall be provided as standard by ArvinMeritor Automotive. The warranty shall include bushings, seals, and cams.

Rear Tires

The rear tires shall be four (4) Michelin 12R22.5 tubeless type 16 PR (Ply Rating) radial tires with XZE highway tread mounted on 22.5 x 8.25 10 hole hub-piloted painted steel disc wheels. 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.

Air 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. All air lines shall be constructed of abrasion-resistant nylon tubing routed in a manner to protect them from damage. The air lines shall be color-coded for ease of identification and simplification of maintenance. Brass fittings shall be provided on all air line connections to prevent corrosion and reduce maintenance.

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.

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 1/4" brass quick-release air inlet with a male connection shall be located inside the driver door on the left side of the cab. The inlet shall allow a shoreline air hose to be connected to the vehicle, discharging air directly into the wet tank.

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.

Air Tank Reservoirs

The braking system shall be provided with a minimum of three air tank reservoirs with a minimum capacity of 1,738 cubic inches each, for a total minimum air system capacity of 5,214 cubic inches. 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.

An automatic drain valve shall be installed on the wet tank to constantly remove condensed moisture as it accumulates. This will extend the life of the air dryer element for reduced maintenance. All other tanks shall be equipped with manual drain valves.

Parking Brake

Spring-actuated emergency/parking brakes shall be installed on the rear axle. One Bendix-Westinghouse PP-1 parking brake control valve shall be supplied on the lower dash panel within easy reach of the driver.

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.

Anti-Lock Braking System

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

Brakes

The front and rear axles shall be equipped with Meritor DiscPlus EX225 17 inch disc brakes.

The front steer axle shall have a nominal cramp angle of 45 degrees, plus two to minus three degrees.

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

Powertrain

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

- 425 gross bhp at 2100 rpm
- 1200 lb.-ft. peak torque at 1300 rpm
- Six cylinder, charge air cooled, 4-cycle diesel
- 506 cu. in. displacement -- 4.49" bore x 5.69" stroke (8.9 liters)
- 16.6:1 compression ratio
- Engine shall be equipped with Full-Authority Electronics
- Electronic Timing Control fuel system
- 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.
- 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 minimum 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.

Engine Brake

One Jacobs model 490 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 selector switch 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 high-low 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.

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:

- 1st - 3.49
- 2nd - 1.86
- 3rd - 1.41
- 4th - 1.00
- 5th - .75

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

Driveline

Drivelines shall have a heavy-duty metal tubular shaft equipped with Spicer 1710HD universal joints to allow the full engine torque to be transmitted to the axle. Drive shafts shall be axially straight, concentric with axis, and dynamically balanced. The driveline application and installation shall meet the guidelines of the driveline manufacturer

Cooling System

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 16 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.

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 for operation in 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.

Cab

The vehicle shall be distinguished by an all-welded 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 end result is a distinctive structure that is aesthetically appealing, functionally durable, and characterized by increased personnel safety.

The cab shall be constructed from 3/16" minimum 3003 H14 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. This combination of a high-strength, welded aluminum inner structure surrounded on all sides by load-bearing, welded aluminum outer skins provides a cab that is strong, lightweight, corrosion-resistant, and durable.

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. All joints shall be electrically seam welded internally using aluminum alloy welding wire. Bidders shall submit with their proposal a drawing or illustration of their cab's roll cage design.

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 3/16" 3003 H14 smooth aluminum plate welded to the sub frame structure to give the cab additional strength and to help protect the occupants from penetration by road debris and under-ride collision impacts.

The cab roof shall be constructed from 3/16" minimum 3003 H14 aluminum tread plate supported by a grid of fore-aft and side-to-side aluminum extrusions to help protect the occupants from penetration by falling debris and downward-projecting objects. Molded fiberglass or other molded fiber-reinforced plastic roof materials are not acceptable.

The cab side roof perimeter shall be constructed from 5 1/2" x 7" 6063-T5 aluminum extrusions with inboard integral drip rails. A cast aluminum front brow shall be welded to the aluminum side roof perimeter extrusions to ensure structural integrity. The rear cab roof shall be connected to the side walls by a 4" x 7" contoured extrusion. 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 3/16" minimum 3003 H14 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 3/16" minimum 3003 H14 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. Each front corner shall have an angled extrusion to hold the windshield sides and connect the cab front to the roof. The cab front shall be welded to the sub frame extrusions below the line of the headlights to provide protection against frontal impact.

Cab Exterior

The exterior of the cab shall be 100" wide x 152" long to allow sufficient room in the occupant compartment for up to five fire fighters and an ALS compartment to the rear of the occupant compartment. The cab roof shall be approximately 101" above the ground with the flat roof option. The back-of-cab ALS to front axle length shall be a minimum of 80".

Front axle fenderette trim shall be brushed aluminum for appearance and corrosion resistance. Bolt-in front wheel well liners shall be constructed of 3/16" composite material to provide a maintenance-free, damage-resistant surface that helps protect the underside of the cab structure and components from stones and road debris.

The cab exterior in the engine compartment shall be supplied with insulation to reduce noise and minimize heating from engine operating temperatures. A fiberglass material with foil on both sides shall be installed in the engine compartment. The product shall be third party tested to 374 degrees and show no signs of thickness increase. The engine compartment insulation shall be attached and protected by means of a sound sealing silicone coated fiberglass cloth with high temperature properties. The gray material shall endure continuous service limits from minus 90 to 550 degrees and have a breaking strength of 60 in. lbs. The insulation shall meet or exceed DOT standard MVSS 302-1 and V-0 (UI subject 94 Test).

A chrome polished air intake grille with an open area of no less than 80% shall be supplied on the front of the cab.

The cab windshield shall be a two-piece replaceable design for lowered cost of repair. The windshield shall be made from 1/4" (0.25") thick curved, laminated safety glass with a 75% light transmittance automotive tint. The front windshield glass area shall be 3,700-sq. in. Forward visibility to the ground for the average (50th percentile) male sitting in the driver seat shall be no more than 10 feet from the front of the cab to ensure good visibility in congested areas. The cab mounted mirrors shall be visible through wiped areas of the windshield.

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 allow 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 break 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 28". The engine cover shall not exceed 45" in width at its widest point.

The engine cover shall be provided with a lift-up section to provide easy access for checking and adding transmission fluid, power steering fluid, coolant, washer fluid, and engine oil without raising the cab.

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 officer as well as integrated dash 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" of floor-to-ceiling height shall be provided in the front seating area of the cab and a minimum of 57" floor-to-ceiling height shall be provided in the rear seating area. A minimum of 41" 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 21.25" side to side by 24.0" front to rear for the driver and no less than 21.25" side to side by 27.0" 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" steering wheel with a center horn button shall be provided. The steering wheel shall be supplied with switching for headlights, wipers, and cruise control.

A full-width overhead console shall be mounted to the cab ceiling for placement 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 the driver and officer seats.

The front cab steps shall be a minimum of 8" deep x 29" wide. The first step shall be no more than 21.0" above the ground (with 385 front tires) and exceeds NFPA 1901 standards of 24". The rear cab steps shall be a minimum 8" deep x 24" wide. The 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, 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.

The cab step wells shall be fitted with lights for dark operation. There shall be a total of eight LED lights, two per door opening provided to illuminate the cab step well area. The lights shall be

installed above the step surface concealed for protection. The lights are to be activated by the cab door ajar circuit.

A black rubber grip handle shall be provided on the interior of each door below the door window to ensure proper hand holds while entering and exiting the cab.

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" minimum 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 37 1/2" wide x 73 1/2" high, and the rear cab door openings shall be approximately 31" wide x 73 1/2" high. The front doors shall open approximately 90 degrees, and the rear doors shall open approximately 90 degrees.

The doors shall be securely fastened to the doorframes with stainless steel piano hinges, with 3/8" (0.375") 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, a one piece, continuous extruded rubber gasket shall be provided around the entire perimeter of all doors.

Flush 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 751 sq. in. each. The rear door windows shall provide a minimum viewing area of 670 sq. in. each. All windows shall have 75% light transmittance automotive safety tint. Windows shall be provided for the front cab doors with dual rack and pinion drive operation and stabilizers for positive operation and long life. Scissors or cable drives are not acceptable. Rear cab doors shall be provided with full roll down windows.

Power Locks and Pedals

Each cab door shall be fitted with an electric lock system. The lock controls shall be mounted on the driver's door control module. A second control shall be supplied by a numeric keypad outside the driver door. A third system of manual key unlock shall be provided on the drivers door. Each interior door handle shall be fitted with a manual lock mechanism to lock or unlock each door individually. A fourth locking system shall be provided with two remote key fobs.

Driver floor pedals shall also be power adjusted for convenience and easy reach.

Power Windows

There shall be a switch located on each door panel to control operation. The Driver shall have a switch pad shall to control operation of all power windows.

Interior Lighting

The cab ceiling lights and the step lights shall be wired through the "door ajar" switch to provide interior lighting when the battery power is on and any cab door is opened.

An engine compartment light shall be installed to illuminate the engine compartment with a cab ajar condition.

ALS Provision with Exterior Doors

The cab shall be provided with an extension, behind the rear cab doors to provide for additional storage options. Two exterior doors shall be provided one each side of the cab. The width of the compartment door shall be approximately 22" wide x full height.

The cab doors will be made of 1/4" aluminum outer sheet material with aluminum extruded inner framework. The doors shall be securely fastened to the doorframe using a full-length stainless steel piano hinge, with a 3/8" pin, and shall be bolted in place.

The inner door panel shall be made of 1/8" diamond plate. For effective sealing, an extruded rubber gasket shall be provided on the perimeter of both doors.

Exterior paddle type handles shall be provided. The interior rear wall of the cab shall be smooth plate painted gray.

The ALS compartment shall be divided into two storage areas; one solely accessible from the outside of the cab, one solely accessible from the interior of the cab.

The exterior ALS compartment doors shall be constructed using a box pan configuration. The outer door pan shall be beveled and shall be constructed from 3/16" painted aluminum smooth plate. The inner door pan shall be constructed from 1/8" smooth aluminum plate. Each compartment door shall have a 1" x 9/16" closed-cell "P" EPDM sponge gasket meeting ASTM D-1066 2A4 standards installed around the perimeter of the door to provide a seal that is resistant to oil, sunlight, and ozone. Paddle style latches will be provided for each door.

The exterior compartment shall be approximately 44" high from the bottom of the cab, with the upper 24" fully transverse. The lower 20" high section shall be approximately 20" deep. The transverse floor shall extend to the door opening at frame rail height on both sides. Backboard storage loops shall be provided at the ceiling of the transverse section for storing a minimum of two backboards.

A roll-out tray constructed of 1/8" aluminum shall be mounted on the extended compartment floors, one each side. The tray shall be sized to the width of the compartment, and shall be approximately 44" deep. The tray shall be approximately 3" in height, and shall be mounted on drawer slides. The tray shall be held in by a locking mechanism built into the slides. The tray shall have a minimum capacity of 100-lbs. at full extension.

The interior ALS compartment shall incorporate two compartments on the officer side back wall, one on top of the other. The lower compartment shall be approximately 34" high x 25" wide x 20" deep. The upper compartment shall be approximately 14" high x 25" wide x 20" deep and shall be

provided with a keyed locking latch. The compartments shall have a painted aluminum door, hinged inboard.

A compartment shall be provided on the driver side back wall, approximately 48" high x 25" wide x 20" deep. The compartment shall have a painted aluminum door, hinged inboard.

A large compartment shall be provided in the center of the back wall. The compartment shall be approximately 44" high x 40" wide x 20" deep. A Robinson ROM brand roll-up shutter-type door shall be provided for this compartment.

Two adjustable mount shelves shall be installed in the roll-up door compartment. The shelves shall be approximately 30" wide x 2" high x 18". An adjustable shelf shall be provided in the lower officer side compartment, and in the driver side compartment. Shelves shall be sized to the width and depth of the compartment, and shall feature a 2" lip.

Map Box

An aluminum map/storage box shall be installed in the cab. The map box shall be constructed of 1/8" (.125) smooth aluminum. A hinged cover, with a push button latch, shall be provided for access to the storage area. The storage area shall be divided into three equal sections. The latch shall have a 50 lb. rating. An ABS mounting surface shall be provided for recess mounting of radio heads, or other items as specified by the department.

The map box shall be mounted in the center front of the cab between the driver and officer seating positions. The map box shall be secured and tested to meet with current N.F.P.A. requirements.

Approximate Dimensions:

- Storage area with lid - 11"L x 13.5"W x 12.25" deep
- Mounting surface - 8.5"L x 13.5" W x 12.25" deep.

Fold Down Tray

A fold down retractable tray shall be provided for the officer's position to act as a writing surface or laptop computer rest. The tray shall be adjustable both fore and aft as well as up and down and conform to all applicable NFPA specifications.

Seats

All seat cushions in the cab will manufactured by 911 Seats Incorporated and will be upholstered with FMVSS/302 flame-retardant, water repellent and wear resistant black and gray tweed, Imperial 1200 fabric.

One 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.

One Seats, Inc. 911 Air Suspension Universal SCBA seat shall be supplied for the front officer's position.

Features shall include:

- Universal styling
- Easy exit, flip up split headrest for improved exit with SCBA.

One Seats, Inc. 911 Universal SCBA seat back and a single bench style seat bottom cushion shall be supplied at the rear of the engine cover. The seat shall be located at the rear of the engine cover, rearward facing.

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.

Two Seats, Inc. 911 Universal SCBA seats shall be provided rear facing located in both wheel wells.

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 bright red 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.

Gray Interior

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

Vista Roof

The rear portion of the cab roof shall be raised 16". This will provide at least 5'-11½" standing room. The front of the vista hood shall be sloped at 45 degrees from 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.

The rear door shall have an 89" vertical dimension for improved ingress/egress characteristics.

The door shall be equipped with a dual striker bolt system.

Mudflaps

Black linear low density polyethylene (proprietary blend) mudflaps shall be installed on the rear of the cab front wheelwells. The design of the mudflap shall have corrugated ridges to distribute water evenly.

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

Cab Mirrors

Two Rosco model R-ViaStyle remote controlled chrome mirrors shall be installed on the front cab doors. The mirrors shall be 13" high and incorporate a top main section 9" tall by 8" wide and convex lower section 3" tall by 6" wide. The adjustment of main sections and convex area shall be controlled in the cab. The mirrors shall be fitted with integral clearance light/turnsignal, LED turn signal in the mirror glass, and heated for defrost. The mirror design shall incorporate a dual break away feature to minimize damage during contacts and spherical head joint for easy field adjustment.

ALS Provision

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).

Batteries

The manufacturer shall supply four WestPenn Deka Model 1131XMF 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 batteries. The batteries shall have a minimum combined rating of 4,000 (4 x 1000) cold cranking amps (CCA) @ 0 degrees Fahrenheit and 820 (4 x 205) 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 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.

Front Turn Signal

Two Advanced Technology model 499 6" x 4" amber sealed-beam halogen turn signals shall be provided on the front of the cab, one on each side above the headlights outboard of the front lower level warning lights.

The turn signals shall be installed in a polished, chrome-plated ABS bezel for corrosion resistance.

Wheels

The vehicle shall have polished (on outer wheel surfaces only) aluminum disc wheels. They shall be forged from one piece corrosion resistant aluminum alloy.

Maximum front rating: 21,000#

The vehicle shall have polished (on outer wheel surfaces only) aluminum disc wheels. They shall be forged from one-piece corrosion resistant aluminum alloy..

Maximum rear rating: 27,000#

Radio

Unit shall be equipped with an AC Delco model XTA2300 AM/FM stereo with weatherband. Two Prestige model 2525 5-1/4" radio speakers and antenna shall be supplied mounted in padding adjacent to driver and officer's seat.

Unit shall be suppressed from engine noise to provide clear sound through respective speakers.

An additional pair of radio speakers shall be supplied.

Rear speakers mounted in rear headliner. Speakers shall be Prestige model 2525 5-1/4".

Front Tow Eyes

Two 3/4" thick heavy duty steel tow eyes shall be securely attached to the chassis frame rails at the front of the apparatus. They shall be mounted in the downward position.

Air Horns

Dual air horns shall be provided 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.

Recessed Fuel Fill

A bright polished chrome plated fuel fill casting shall be recessed in the body side.

Rear Mud flaps

Black linear low density polyethylene mud flaps shall be installed on the rear body wheel wells. A reflective logo shall be adhered to the flap itself. The design of the mud flap shall have corrugated ridges to distribute water evenly.

Rear 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.

Rear Tow Eyes

Two heavy-duty tow eyes made of 3/4" (0.75") 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.

Trailer Hitch

A rear mounted Class III 3-way trailer hitch shall be constructed of 2-1/2" x 2-1/2" steel tubing and 5" steel channel. The hitch shall be securely attached to the chassis frame and painted black. The hitch shall be supplied without a ball and pin.

There shall be a trailer hitch and receiver installed at the front of the chassis.

Quick Connect

Four quick-connect power leads for the 12-volt electrical system shall be installed for the portable winch system, one at the front, one at the rear, and one for each rear side facing receiver.

Battery Charger

A 20-amp 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.

The shoreline connection and remote charge indicator panel shall be located outside of the cab at the driver door area.

Seating Capacity Tag

A permanent plate on each entry door shall be installed, specifying that seating for five shall be provided.

Apparatus Body

The body compartmentalization depth shall be increased by 2" each side. The overall width of the body shall be increased to 100.5" outside rub rail to outside rub rail.

The apparatus body shall be constructed entirely of aluminum extrusions with interlocking aluminum plates. An extruded modular aluminum body is required due to the high strength to weight ratio of aluminum, corrosion resistant body structure, easy damage repair, and lighter overall body weight to allow for increased equipment carrying capacity.

The interlocking framework shall be constructed from beveled T6 and T5 extrusions and shall be electrically seam welded both internally and externally at each joint using aluminum alloy welding wire. All horizontal surface, rear steps, running boards shall be constructed from aluminum fire apparatus quality diamond plate.

Each body corner shall be a 3.5" x 8.75" aluminum 6063T5 alloy extruded corner section with 3/16" wall thickness and shall be welded as an integral part of the body. Horizontal body side extrusions shall be a 1.5" x 4" 6063T5 aluminum tube with 3/16" wall thickness and 3/16" outside corner radius.

The wheel well frame, constructed from 1.5" x 4" 6063T5 aluminum extrusions shall be slotted the full length to permit an internal fit of 1/8" aluminum diamond plate. The wheel well trim shall be constructed from 6063 T5 polished aluminum extrusion. The liner shall be constructed of 3/16" composite material to provide a maintenance free, damage resistant surface.

The body design shall allow the booster tank to be completely removable without disturbing or dismounting the apparatus body structure. The booster tank mounting system shall utilize a floating design to reduce stress from road travel and vibration. An extruded aluminum cradle covered with rubber shock pads and corner braces shall support the tank.

The entire exterior body shall be completely sanded and de-burred to assure a smooth finish prior to paint. The entire rear surface of the body shall be natural aluminum to provide a long lasting, maintenance free surface when removing hose.

The apparatus body structure shall be securely fastened to the chassis with 5/8" OD steel U-bolts.

Underbody Cross Members

Underbody cross members shall be constructed entirely from aluminum "I" beam and heavy walled extrusions and shall be full width of the body.

A frame cross member extrusion shall be at the front of the body. The extrusion shall be 3" x 3" 6061T6 aluminum with 3/8" wall thickness. A solid 3" x 3" "I" section aluminum extrusion shall be provided full width at the rear. The cross members shall be designed to support the compartment framing and shall be welded to a 1-3/16" x 3" solid 6063T5 aluminum frame sill extrusion. The frame rail extrusion shall be shaped to contour with the chassis frame rails and shall be protected from contact with the chassis frame rails with 5/16" x 2" fiber reinforced rubber strips.

Rear Step

A rear tailboard step shall be provided at the rear of the body. The maximum step height shall not exceed 24" in accordance with current NFPA requirements. The step shall be formed from 3/16" aluminum diamond plate and shall be reinforced with a minimum of 1.5" x 3" aluminum extrusion. The step shall be bolted on to the rear body from the underside assuring a clean surface. The rear step shall be easily removable for replacement in the case of damage.

A label shall be provided at the rear to warn personnel that riding on the rear step while the vehicle is in motion is prohibited.

Hose bed

Hose bed sides shall consist of 3/16" 3003 H14 smooth aluminum plate welded to a perimeter frame constructed of 3 x 3 3/16" heavy walled 6063 T5 aluminum extrusion for rigidity.

The hose bed compartment deck shall be constructed entirely from maintenance free, extruded aluminum. Extrusions shall have an anodized, radiused ribbed top surface for maintenance free service life. Extruded aluminum slats shall be approximately 3/4" x 7.5" and shall be riveted into a one-piece grid system to prevent the accumulation of water and allow ventilation to assist in drying hose. The hose bed compartment shall be free of sharp edges and projections to prevent hose damage. The hose bed shall be completely removable for easy access to the booster tank. The compartment deck design shall incorporate a provision for the installation of adjustable hose bed dividers.

Compartments

All body compartments shall be constructed from 1/8" formed aluminum 3003 H14 alloy plate. Each compartment shall be modular in design and shall not be a part of the body support structure.

Compartment floors shall be constructed of 1/8" aluminum fire apparatus quality diamond plate welded in place. Compartment floors shall be supported by a minimum 1.5" x 3" x 1/8" walled aluminum extrusions. The compartment seams shall be sealed using a permanent pliable silicone caulk. Compartments shall be machine louvered for adequate ventilation. External compartment tops shall be constructed of 1/8" fire apparatus quality aluminum diamond plate. Service access shall be provided to main body wiring harnesses.

Side compartment doors shall be constructed using a box pan configuration. The outer door pan shall be beveled and shall be constructed from 3/16" aluminum plate.

Rear compartment doors shall be beveled and shall be constructed from 1/8" aluminum fire apparatus quality diamond plate.

Inner door pans shall be constructed from 3/32" smooth aluminum plate. The inner pan shall have a 95-degree bend to form an internal drip rail.

A drain hole shall be installed in the lower corner of all inside door pans to assist with drainage. Compartment doors shall have a closed cell neoprene sponge gasket installed around the perimeter of the door. Polished stainless steel D-ring style twist lock door latches shall be provided. The D-ring handles shall be mounted directly to the door latching mechanism with screws that do not penetrate the door material.

Compartment doors shall be securely attached to the apparatus body with full-length stainless steel piano type hinges and machine screws in drilled and tapped holes. All doors shall have a gas shock style hold open device.

An anodized aluminum drip rail shall be mounted over each compartment opening to assist with water runoff.

Rub rail

The body shall have a body side protection rub rail along the length of the body on each side and at the rear. The rub rail shall be constructed of minimum 3/16" thick anodized aluminum 6463T6 extrusion. The rub rail shall be a minimum of 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 shall be of a C-channel design to allow marker and warning lights to be recessed inside for protection. The top surface of the rub rail shall have a minimum of 5 serrations raised .1" high with cross grooves to provide a slip resistant edge for the rear step and running boards. The rub rail shall be spaced away from the body using 3/16" nylon spacers. The ends of each section shall be provided with a rounded corner piece. The area inside the rub rail C-channel shall be inset with a white reflective material for increased side and rear visibility.

Access Steps

Auxiliary access steps shall be provided at the rear of the body for access to the hose bed and at the transverse walkway for access to the pump operator's panel.

Access steps shall be mounted in accordance with current NFPA requirements, and shall not exceed a maximum stepping height of 18". The top surface of the step shall have a minimum of 35-sq. in. and shall have an aggressive multi-directional, slip-resistant surface. Access steps shall be able to support up to 500 pounds. Steps shall be located to provide a minimum of 8" clearance between the leading edge of the step and any obstruction.

Handrails

Access handrails shall be provided at all step positions, including, but not limited to, rear tailboard and top mount walkway. All body handrails shall be constructed of maintenance free, corrosion resistant, extruded aluminum. Handrails shall be a minimum of 1.25" OD and shall be installed between chrome end stanchions at least 2" from the mounting surface to allow for access with a gloved hand. The extruded aluminum shall be ribbed to assure a good grip for personnel safety.

The handrails shall be installed as follows:

- Two 48" handrails, one each side, located on the back of the body
- One 48" handrail horizontally below the rear hose bed opening
- Two 30" handrails, one each side, located at the transverse walkway
- One 12" handrail at the top rear of the body for use with the rear steps
- Two 12" handrails, one each side, located adjacent to the cross lays (as required).

Pump Compartment

The apparatus body shall be divided into two individual sections. The pump compartment shall be a separate module from the apparatus body and hose bed compartmentalization. This will allow each module to move independently of the other.

The pump operator's control panel and pump compartment shall be located at the front of the body. The control panel shall be of the top mounted type to provide a full 360 degree unobstructed view of the fire ground.

The pump compartment module shall extend full width of the body with the pump operator's panel located above the fire pump. A full width walkway shall be constructed of 3/16" aluminum diamond plate and shall be supported by the body extruded aluminum substructure framework. The aluminum-extruded substructure is required to eliminate corrosion and dissimilar metal action. The walkway shall be approximately 21" wide x 70" long and shall be unobstructed for operator safety.

A side running board formed from 1/8" aluminum diamond plate, shall be provided and shall extended the full length of the pump module, on each side of the apparatus. The running board shall be bolted to the pump compartment for rigidity and to provide easy removal for replacement in the case of damage.

There shall be one tool compartment located under the transverse walkway on either side of the apparatus with a vertically hinged door. The compartment shall be approximately 18" wide x 18" high x 14" deep and shall contain approximately 3.0 cubic feet of storage space.

A removable diamond plate panel shall form the front face of the pump compartment below the top mount panel to provide easy access to the pump compartment. Two aluminum diamond plate pump compartment access doors shall be provided, one each side, above the side pump panels. The access doors shall be horizontally hinged, with gas-shock hold-open devices, and shall be securely attached with a full-length stainless steel piano hinge and stainless steel D-ring style handle. The access doors shall be approximately 24" wide x as high as possible.

Pump Operator's Panel

The pump operator's panel and side panels shall be constructed of brushed, non-glare 14 gauge stainless steel for ease of maintenance. The pump operator's panel shall be approximately 16" high x 70" wide.

Pump panel light shields shall be provided for each side panel and the top mount pump operator's panel. The operator's panel shall be formed to extend upward approximately 9" and have a double break returning forward creating an integral illumination hood for the pump panel lights. Side light shields shall be anodized aluminum extrusion bolted to the side pump panels.

Valve control levers shall be of the vertically operated quarter turn, locking type. Each lever shall have a round, chrome, fluted edge knob providing an easy gripping surface. Each knob shall be clearly engraved to identify the locking direction. The control levers shall be mounted in an anodized extrusion to eliminate slots in the stainless steel panel.

Valve control levers shall be located directly adjacent to one another, mounted in line so they are in the same position when shut off. Each control lever shall be connected directly to its respective valve by a 7/8" non-corrosive rod to form a direct linkage control system. The specified pressure gauges shall be located directly above the discharge control levers. Each control shall be clearly marked by metal nameplates recessed into the control lever knob.

To improve identification of discharges and intakes, color-coded tags, in accordance with current NFPA standards, shall be provided. The tags shall utilize an etching process to provide easy visibility and improved field service life. Tags shall be affixed using an industrial grade adhesive, eliminating the need for pop rivets or screws into the stainless steel panel or control handle.

Body

The apparatus body shall be entirely constructed of aluminum. The complete body framework shall be completely constructed from 6061T5, 6061T6, 6063T6, and 6063T5 aluminum alloy extrusions. To form the framework, these extrusions are beveled and electrically seam welded both internally and externally at each joint using 5356 aluminum alloy welding wire. Each body corner shall be a 3-1/2" X 8-3/4" aluminum 6063T5 alloy extruded corner section with 3/16" (.187) wall thickness and shall be welded as an integral part of the framework. The horizontal frame member extrusions shall be 1-1/2" (1.5) x 4" aluminum 6063T6 alloy with 3/16" (.1875) wall thickness and 3/16" (.1875) outside corner radius. The frame cross member extrusions shall be 3" x 3" aluminum 6061T6 alloy with 3/8" (.375) wall thickness. These cross members shall extend the full width of the body to support the compartments. The cross members shall be welded to a solid aluminum 6061T5 alloy frame sill extrusion that is 1-3/16" x 3" and is shaped in contour with the chassis frame rails. The wheel well frame shall be constructed from 1-1/2" (1.5) x 4" aluminum 6063T5 alloy extrusions slotted the full length to permit an internal fit of 1/8" (.125) fire apparatus quality aluminum tread brite.

All of the smooth aluminum plate and fire apparatus quality aluminum plate and fire apparatus quality tread brite used in body construction shall be aluminum 3003 H-14 alloy. All horizontal surfaces, rear steps, running boards and a portion of the rear body surface shall be welded aluminum fire apparatus quality tread brite.

The body hose bed shall consist of 3/16" (.1875) aluminum 3003 H-14 alloy smooth plate welded to the extruded framework with a 3" x 3" extrusion welded to the top. This extrusion shall have 1/4"

(.25) radius rounded corners and a 1/8" (.125) wall thickness. The hose bed compartment deck shall be entirely constructed from maintenance free 3/4" x 7-1/2" hollow aluminum extrusions welded into a one piece grid. The hose bed extrusions shall have a radiused ribbed top surface that is completely anodized. The hose bed shall be located directly above the booster tank and shall be completely removable for access to booster tank.

One handrail constructed of 1-1/4" O.D. anodized aluminum tube, mounted with two chrome end stanchions shall be installed horizontally directly below the rear hose bed opening. The handrail shall be ribbed to assure a good grip for personnel safety.

All body compartments shall be constructed from 1/8" (.125) formed aluminum 3003 H-14 alloy smooth plate. All compartment floors shall be constructed of aluminum fire apparatus quality tread brite welded in place. All compartment seams shall be sealed by using a permanent pliable silicone caulking. The compartments shall be machine louvered for adequate ventilation. The external compartment tops shall be constructed from 1/8" (.125) fire apparatus quality tread brite.

The body shall have a body side protection rub rail along the length of the body on each side. The rub rail shall be constructed of minimum 3/16" thick anodized aluminum 6463T6 extrusion. The rub rail shall be constructed of minimum .1875" thick 6463T6 aluminum extrusion. The rub rail shall be a minimum of 2.75" high X 1.25" deep and shall extend beyond the body width to protect the compartment doors and the body side. The design of the rub rail shall protect any specified marker lights that are mounted inside its C-channel. The top surface of the rub rail shall have 5 serrations raised a minimum of 0.1" high with cross grooves designed to provide a slip resistant edge for the rear step and running boards. The rub rail shall be spaced away from the body using .1875" nylon spacers. The ends of each section shall be provided with a rounded corner piece. The area inside the rub rail C-channel shall be inset with a white reflective material for increased visibility.

Compartment doors shall be constructed entirely from aluminum 3003 H-14 alloy smooth plate using a box pan configuration. The outer door plate shall be constructed from 3/16" (.1875) aluminum plate and the inner pans shall have a 95 degree bend to form an internal drip rail. A 1/4" (.25) drain hole shall be installed in the lower corners of the inside door pans for drainage. Doors shall be fully gasketed with closed cell neoprene sponge. The gasket shall have a drip rail shape to carry off water. The compartment doors shall have double catching two point safety slam latches, recessed inside the double door pan. Latches shall meet strength requirements for passenger doors as specified in Federal Motor Vehicle Safety Standard #206. Door handles shall be heavy duty stainless steel Hansen flush mounted D-ring handles. The D-rings shall have a slight break to facilitate easy access while using gloves. The D-ring handles shall be mounted directly to the door latching mechanism without mounting screws penetrating the door material. The doors shall be securely attached to the apparatus body with full length stainless steel piano type hinges. All vertically hinged doors shall have a gas shock style hold-open device.

The rear compartment doors shall be constructed of 1/8" (.125) aluminum fire apparatus quality aluminum with the inner door pans being constructed of smooth aluminum plate.

The complete apparatus body structure shall be free from nuts, bolts, and other fasteners. Upon completion of the weldment, the body shall be completely sanded and de-burred for the removal of all sharp edges.

The operator's controls and gauges shall be mounted on pump panels located at the forward portion of the body on either side of the apparatus. Pump panels shall be 14 gauge stainless steel with a brushed non-glare finish for lasting appearance and ease of maintenance, and shall be completely removable for easy access to the pump compartment. Each panel shall be split approximately two thirds of the way from the bottom by a bright dip anodized extrusion which will allow the panel to be removable for easy access to the gauges. "T" handle controls will be mounted through this extrusion and shall be appropriately labeled directly at the control.

There shall be a pump access door over the right side pump panel made of 1/8" (.125) tread brite. This door shall be approximately 45" wide x 21-1/2" high and shall utilize a stainless steel D-ring style handle.

The apparatus body shall be fastened to the chassis with 5/8" (.625) OD steel U-bolts. 5/16" x 2" fiber reinforced rubber shall be used to keep the body frame sills contact with the chassis frame rails.

The rear body shall be constructed of unpainted aluminum smooth plate.

Compartmentalization

The compartments shall have a minimum of 120 cubic feet of total usable storage space. This area shall be divided into compartments as follows:

- Left Side: There shall be one compartment ahead of the rear wheels. The compartment shall be approximately 48" wide x 59" high x 20" deep and contain 30 cubic feet of storage. The door opening shall be 48" wide x 55" high.
- There shall be one compartment over the rear wheels with vertically hinged double doors. The compartment shall be approximately 56" wide x 27" high x 20" deep and shall contain 17 cubic feet of storage. The door opening shall be 56" wide x 23" high.
- There shall be one compartment behind the rear wheels with vertically hinged double doors. The compartment shall be approximately 48" wide x 59" high x 20" deep and contain 30 cubic feet of storage. The door opening shall be 34" wide x 55" high.
- Rear: There shall be one double door compartment at the rear step. The compartment shall be approximately 46" wide x 50" high x 24" deep. The compartment shall contain 31 cubic feet of storage. The door opening shall be 44" wide x 50" high.
- Right Side: There shall be one compartment ahead of the rear wheels with a vertically hinged single door. The compartment shall be approximately 48" wide x 59" high x 20" deep. The door opening shall be 23" wide x 55" high.
- There shall be one compartment over the rear wheels with a horizontally hinged lift-up door. The compartment shall be approximately 56" wide x 27" high x 20" deep. The door opening shall be 56" wide x 23" high.
- There shall be one compartment behind the rear wheels with vertically hinged double doors. The compartment shall be approximately 34" wide x 59" high x 20" deep. The door opening shall be 34" wide x 55" high.

Driver Side Roof Top Compartments

Two driver side roof compartments shall be provided. The compartments shall be integral to the driver side assembly. The forward compartment shall be approximately 86" long, and rearward compartment shall be approximately 44" long. There shall be a landing area at the rearmost compartment top to allow safe use of the access ladder.

The compartments shall include smooth plate flooring and shall have drain holes to prevent the accumulation of water.

The compartment top lids shall be raised and constructed of 1/8" aluminum tread plate. The lids shall include stainless steel hinges and shall be hinged to the outside of the compartment. Each lid shall include push-button latches and be wired to the door ajar indicator in the cab.

Lighting shall be provided for each compartment. The lighting shall be mounted to the compartment top lid on angled brackets. The brackets shall position lights to shine into the compartment area when the lid is in the open position.

Officer Side Roof Top Compartments

Two officer side roof compartments shall be provided. The compartments shall be integral to the officer side assembly. The forward compartment shall be approximately 86" in length, and the rearward compartment shall be approximately 60" in length.

The compartments shall include smooth plate flooring and shall have drain holes to prevent the accumulation of water.

The compartment top lids shall be raised and constructed of 1/8" aluminum tread plate. The lids shall include stainless steel hinges and shall be hinged to the outside of the compartment. Each lid shall include push-button latches and be wired to the door ajar indicator in the cab.

Lighting shall be provided for each compartment. The lighting shall be mounted to the compartment top lid on angled brackets. The brackets shall position lights to shine into the compartment area when the lid is in the open position.

Ladder Tunnel

There shall be a ladder tunnel on the right side of the body. The tunnel shall accommodate at a maximum one 24' 2-section extension ladder, one 14' roof ladder, one 10' attic ladder and two pike poles (maximum of 12' poles). A vertically hinged diamond plate door with a "D" ring handle shall secure the storage. The compartment shall be constructed of .125" smooth aluminum plate with two "U" shaped aluminum tracks with Nylatron secured to the bottom for the 2-section ladder and the roof ladder.

Pump Module

The apparatus body shall be divided into two individual sections. The pump compartment shall be a separate module from the apparatus body and hose bed compartmentalization. This shall allow each module to move independently of the other.

Foam Tank

A thirty gallon polypropylene foam tank cell shall be supplied as an integral part of the water tank. A pressure/vacuum vent shall be installed in the lid of the tower. A minimum 1.0" drain valve shall be provided. The drain shall be piped to drain below the apparatus. A lifetime manufacturer's limited warranty shall be included.

Booster Tank

The booster tank shall be rectangular in configuration and shall have a total capacity of 1000 gallons. All tank sides, top and bottom, shall be constructed of 1/2" black UV stabilized copolymer polypropylene.

The tank shall be constructed utilizing latest thermo plastic welding technology. A clean, hot air controlled temperature process shall ensure that the weld reaches its plasticized state without cold or hot spots.

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

The tank shall have a combination vent and manual fill tower. The 10" x 10" fill tower shall be located in the left front corner of the tank. The tank overflow shall be 4" diameter and shall dump behind the rear wheels to permit maximum traction. The tower shall have a hinged cover and 1/4" thick polypropylene screen.

There shall be two standard tank openings; one for the tank to pump suction line with an anti-swirl plate and one for a tank fill line.

Baffles, both longitudinal and latitudinal shall be interlocking and thermo welded to minimize water surge during travel, enhancing road-handling stability. Openings in the baffles shall be positioned to allow water flow to NFPA standards during filling or pumping operations.

The tank shall be mounted on hard rubber cushions to isolate the tank from road shock and vibration. The tank shall be completely removable without disturbing or dismounting the apparatus body structure.

A lifetime manufacturer's limited warranty shall be included.

Roll-Up Doors

The following compartment(s) shall be provided with Robinson brand roll up doors: L1, L2, L3, R1, R2, R3.

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.

Rear Compartment Door

The rear body compartment doors shall be constructed from aluminum smooth plate.

Speedlay Cover

A cover constructed of red 18 oz. PVC vinyl coated polyester shall be installed over the front openings of the apparatus speed 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 secured in place to comply with the latest edition of NFPA 1901.

A pair of covers constructed of red 18 oz. PVC vinyl coated polyester shall be installed over the side openings of the apparatus speed lay. The base fabric shall be 1000 x 1300 Denier Polyester with a fabric count of 20 x 20 square inch.

The covers shall be secured in place to comply with the latest edition of NFPA 1901.

Hose bed Cover

A cover constructed of black 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 nylon covered elastic synthetic rubber cord with stainless steel hooks spaced approximately 12" apart 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.

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 for long-lasting appearance and shall be sanded and deburred 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 Capacity

The hose bed shall have the following capacity:

- 1000' of 5" rubber hose
- 150' of 3" double jacket hose
- 300' of 1.75" double jacket hose

Adjustable Shelving Tracks

The following compartment(s) shall be equipped with vertically mounted tracks for the installation of adjustable shelves and/or adjustable roll-out trays. The tracks shall be of extruded aluminum and attached to the side or back wall(s) with rivets. Compartments: L1 forward of partition, L3, R1

Aluminum Shelves

The shelves shall be constructed of 3/16" smooth aluminum plate. 2" lips on the front and the back shall accommodate optional plastic interlocking compartment tile systems. The shelves shall have bi-directional rigidity (side to side and front to back) and one-piece construction. Each shelf shall hold a maximum load of 250 pounds.

If the shelves are in a fixed location, the side and rear lips may be deleted to facilitate shelf installation.

The shelves shall be sized, width and depth, to match the size of the specified compartment. Each shelf shall be mounted in the compartment as directed by the purchaser.

If the shelf is mounted to adjustable tracks mounted to the back wall, the shelf shall be capable of holding 100#

There shall be two adjustable shelves in L1 forward of the partition, two in L3, one adjustable shelf in R1 lower, one fixed shelf in R1 at the break, and one fixed shelf in R3 at the break.

Roll-Out Tray

Three rollout trays constructed of 3/16" smooth aluminum with 3" sides shall be provided. The tray shall be mounted in the compartment on drawer slides that will permit the tray to roll out of the compartment approximately 24". The tray shall have a positive lock-in and positive lockout mini-rotary latch mounted to the under side of the tray.

One floor mounted tray shall be supplied in L3 with a weight capacity of 250 lbs. at full extension.

One floor mounted tray shall be supplied in R3 with a weight capacity of 250 lbs. at full extension.

One floor mounted tray shall be supplied in B1 with a weight capacity of 500 lbs. at full extension.

Four aluminum extruded slide channels, two on each side compartment wall, shall be installed to allow mounting of roll out drawer sliders for the upper B1 roll out tray. This permits the drawer slides to be vertically adjustable.

Compartment Storage

There shall be a vertical partition constructed of 1/4" smooth plate aluminum with a DA sanded finish in compartment L1.

Two roll-out aluminum tool boards shall be provided in compartment L1 rearward of the partition. The tool boards shall be constructed of .25" smooth aluminum plate. The tool board shall be sized to the specified compartment available door opening and compartment depth (up to 48"). The board shall be mounted on drawer slides, at the top and bottom; that will permit the board to roll out of the compartment up to 36". 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 pounds maximum at full extension. The positive lock-in and lock-out mechanism shall be located at the bottom front of the tool board and shall be easily operated with a gloved hand. The tool board shall be located as directed by the purchaser.

Extinguisher Rack

A heavy duty poly-type rack shall be provided, mounted on a roll-out tray. The rack shall have the capacity to hold four extinguishers, each slot to be 8"W x 8"H.

Folding Steps

Three heavy duty folding steps that meet NFPA requirements shall be mounted each side on the driver and officer side front compartment face.

Assist handrail(s) shall be provided at each position where steps for climbing are located. Handrail(s) shall consist of 1-1/4" OD 6063T5 anodized aluminum tube mounted between chrome stanchions. Handrail(s) shall be machine extruded with an integral ribbed surface to assure a good grip for personnel safety.

Step Surfaces

All body exterior step surfaces shall be provided with an aggressive skid-resistant surface in accordance with current NFPA requirements.

Aluminum diamond plate steps 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" (0.125"). Gripping surfaces shall be circular in design, a minimum of 1" diameter and on centers not to exceed 4".

Running Board Suction Tray

The driver and officer side of the pump module shall be provided with a recessed running board suction tray. The tray will be constructed of 1/8" aluminum fire apparatus quality tread brite

(exterior) with a smooth surface interior. The bottom of the tray shall have aluminum slats to allow water drainage from hose stored in the tray.

A heavy duty 2" wide nylon strap shall be provided for each of the running board hose trays. The strap shall be attached to the running board by the use of footman loops. Heavy duty Velcro shall be sewn on the strap to securely retain the hose in the trays.

Rear Tailboard Step

A full width step shall be provided at the rear of the apparatus body. The rear step shall be approximately 10" deep as measured from the rear face of the apparatus body. The tailboard step shall be constructed of 3/16" fire apparatus tread plate. The step shall be bolted to the body frame from the underside to allow for easy replacement in the case of accident or damage and to assure a clean unobstructed surface.

The tailboard shall have formed edges with a double lip along the front and shall be reinforced with 3" x 1/2" aluminum extrusion.

The rear tailboard shall include a multi-directional, aggressive gripping surface incorporated into the diamond plate in accordance with current NFPA requirements. The surface shall extend vertically from the diamond plate sheet a minimum of 1/8" (0.125"). Gripping surfaces shall be circular in design, a minimum of 1" diameter and on centers not to exceed 4".

Ziamatic QUIC-Ladder

A ZICO QUIC-Ladder model 3096 shall be installed on the rear of the driver side body.

SCBA Bottle Storage

Seven 8" diameter air bottle holders shall be provided for carrying additional spare SCBA bottles.

The bottle holders shall be located in the rear wheel well area as follows:

- Three on the driver's side of the apparatus, two ahead of the rear wheels and one behind the rear wheels, to the rear of the chassis fuel fill.
- Four on the officer's side of the apparatus, two each ahead of and behind the rear wheels.

The storage area shall be constructed of high strength "ABS" to provide protection for the air bottles. Each area shall be covered with a vertically hinged stainless steel door with a push button latch. The driver's side rear door shall also provide a cover over the fuel fill area. Each door shall include an inner door seal for increased protection against the elements.

Pump Panel Air Outlet

A 1/4" female air hose fitting shall be mounted on the pump panel with a 1/4" snubber valve. The fitting and valve shall be connected to the air reservoir tank. 25' of 1/4" air hose with one 1/4" male and one 1/4" female air fitting shall be supplied.

Storage Pan

A storage pan constructed of 3/16" fire apparatus quality tread plate shall be bolted to the body at the front of the hose bed.

The storage pan shall be for the generator and hydraulic reservoir.

Hydraulic Hose Reel

Two Hannay high-pressure electric rewind dual hydraulic hose reel, model EF2014-17-18 with chrome plated base and stainless steel sides, shall be supplied. Each unit shall be supplied with a flexible HRT hose for connecting from a hydraulic power supply to the reel. The reel shall be wired directly to the truck 12-volt battery system with guarded finger push button rewind.

Hannay Model #PW-2R captive type nylon roller unit shall be installed. The roller unit shall be mounted in the specified compartment to permit the HRT hose to feed directly off the reel. One 100' length of twin hydraulic hose shall be supplied.

Each reel shall be located in the upper B1 compartment.

Recess for Rear Light Bar

A recessed compartment shall be provided at the rear of the body, below the hose bed to allow recessed, flush mounting of the rear traffic advisor or signal master.

Pump System

The pump shall be a mid-ship mounted Hale QMAX 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 (207 MPa). 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 must be sealed with double-lip oil seal to keep road dirt and water out of the gearbox.

Two 6.0" diameter suction ports with 6" NST male threads and removable screens shall be provided, one each side. 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.

Pump Packing

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, 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.

Pressure Relief Valve

The pump shall be equipped with an automatic pressure control device. A single bronze variable-pressure-setting relief valve shall be provided and be of ample capacity to prevent an undue pressure rise as outlined in N.F.P.A 1901. The relief valve shall be normally closed and shall open against pump pressure. A relief valve control wheel with a control light to signal when open shall be mounted on the pump operator's panel.

Discharge Manifold

The pump system shall utilize a stainless steel discharge manifold system that allows a direct flow of water to discharge valves. The manifold and fabricated piping systems shall be constructed of a minimum of Schedule 10 stainless steel to reduce corrosion.

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 10 years. A copy of the warranty document shall be provided with the proposal.

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.

System

One 4-1/2" master suction and one 4-1/2" master discharge gauge shall be pump panel-mounted. These compound gauges shall be liquid filled.

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

One vernier type throttle shall be mounted on the pump operator's panel and shall be used to control the engine RPM.

A master drain valve shall be installed and operated from the pump operator's panel. The master pump drain assembly shall consist of a Class 1 bronze master drain with a rubber disc seal and turning handle.

The manual Master Drain Valve shall have six individually-sealed ports that allow quick and simultaneous draining of multiple intake and discharge lines. It shall be constructed of corrosion-resistant material and be capable of operating at a pressure of up to 600 PSI.

The master drain shall provide independent ports for low point drainage of the fire pump and auxiliary devices.

Gearbox Cooler

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

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 Rating and Certification

The pump shall be rated at 1,500 gallons per minute.

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.

Suction Side Relief Valve

The pump shall be equipped with an Akron style 59 cast brass, variable-pressure-setting relief valve on the pump suction side. It shall be designed to operate at a maximum inlet pressure of 250 psi. The relief valve shall be normally closed and shall be set to begin opening at 125 psi in order to limit intake pressures in the pumping system. When the relief valve opens, the overflow water shall be directed through a plumbed outlet to discharge below the apparatus body in an area visible to the pump operator. The overflow outlet shall terminate with a male 2-1/2" NST threaded fitting to allow the overflow water to be directed away from the vehicle with a short hose (supplied by the fire department) during freezing weather or under other conditions where an accumulation of water around the apparatus might be hazardous.

Water Tank Level Gauge

One Class 1 brand Intelli-Tank™ water tank level gauge system 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.

In addition to the pump panel mounted lights there shall be four Whelen 500 series L.E.D (Light Emitting Diode) light heads installed each side on the upper top mount panel sides.

The system shall be controlled by a Class One electronic tank level driver module that is integral of the NFPA required Pump Panel mounted tank level light assembly.

The additional tank level system shall be interlocked through the parking brake assembly so as not to be on while the vehicle is in motion.

The remote light heads shall be arranged as follows.

- Full: Green
- ¾: Blue
- ½: Amber
- ¼: Red

Pump Cooler

The pump shall have a 3/8" line installed from the pump discharge to the booster tank to allow a small amount of water to circulate through the pump casing in order to cool the pump during sustained periods of pump operation when water is not being discharged. The pump cooler line shall be controlled from the pump operator's panel by a 3/8" snubber valve.

Top Mount Suction Control

One 2-1/2" suction valve shall be controlled by a vertically mounted quarter turn locking handle located on the top mounted operator's panel. This handle will replace the handle normally supplied on the side panel.

Pump-to-Tank

One manually operated 1-1/2" Akron valve shall be installed between the pump discharge, and the booster tank in order to fill 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.

Triple Speedlay Hose bed

One triple speedlay hose bed shall be provided at the walkway directly below the top mount control panel. The top two speedlay sections shall have a capacity of 200' of 1-3/4" double jacket fire hose in a single hoselay configuration. The crosslay decking shall be constructed entirely of maintenance free 3/4" x 2-3/4" (0.75" x 2.75") hollow aluminum extrusions.

The two 1.5" speedlay sections shall include one 2" brass swivel with a 1-1/2" NST male hose connection to permit the use of the hose from either side of the apparatus. There shall be an opening at the walkway for each speedlay to allow for loading hose.

Stainless steel rollers with nylon guides set in aluminum extrusions shall be installed horizontally and vertically on each end of the crosslay, to allow easy deployment of the hose and to help protect the body paint.

The 1.5" speedlays shall consist of a 2" heavy duty hose from the pump discharge manifold to the 2" swivel. The discharge shall include a 2" manually operated Akron valve. All fabricated piping shall be constructed of a minimum of Schedule 10 stainless steel piping for superior corrosion resistance.

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 top-most speedlay shall be upgraded to 2-1/2" Akron 8825 discharge valve(s) and 2-1/2" premium quality fire apparatus high-pressure flexible piping in place of the standard.

The discharge shall include a Class 1 2.5" diameter liquid-filled (-30-0-600 psi) pressure gauge mounted at the pump panel adjacent to the discharge control. This logical gauge and valve alignment is to ensure proper control execution and ease of field operation. 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.

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 for superior corrosion resistance, and decreased friction loss.

Front Bumper Discharge

One 1-1/2" pre connect outlet with a manually operated Akron valve shall be supplied to the extended front bumper. The pre connect 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 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 discharge shall include a Class 1 2.5" diameter liquid-filled (-30-0-600 psi) pressure gauge mounted at the pump panel adjacent to the discharge control. This logical gauge and valve alignment is to ensure proper control execution and ease of field operation. 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.

An automatic drain valve shall be installed for the front jump line. The control shall be installed on the pump operator's panel.

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.

Left Side Discharge

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

Each 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.

Each discharge shall include a Class 1 2.5" diameter liquid-filled (-30-0-600 psi) pressure gauge mounted at the pump panel adjacent to the discharge control. This logical gauge and valve alignment is to ensure proper control execution and ease of field operation. 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.

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.

Location: left side discharge 1, left side discharge 2

Right Side Discharge

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

Each 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.

Each discharge shall include a Class 1 2.5" diameter liquid-filled (-30-0-600 psi) pressure gauge mounted at the pump panel adjacent to the discharge control. This logical gauge and valve alignment is to ensure proper control execution and ease of field operation. 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.

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.

Location: right side discharge 1, right side discharge 2

Right Rear Discharge

One 2-1/2" discharge outlet with a manually operated Akron valve shall be supplied to the right 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 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 discharge shall include a Class 1 2.5" diameter liquid-filled (-30-0-600 psi) pressure gauge mounted at the pump panel adjacent to the discharge control. This logical gauge and valve alignment is to ensure proper control execution and ease of field operation. 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.

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.

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

The discharge shall include a Class 1 2.5" diameter liquid-filled (-30-0-600 psi) pressure gauge mounted at the pump panel adjacent to the discharge control. This logical gauge and valve alignment is to ensure proper control execution and ease of field operation. 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.

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.

Tank-To-Pump

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.

Left Intake

One 2 1/2" suction inlet with a manually operated 2 1/2" Akron valve shall be provided on the left side of the apparatus at the 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 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 for superior corrosion resistance, and decreased friction loss.

Right Intake

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 for superior corrosion resistance, and decreased friction loss.

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

Foam System

There shall be a fully automatic electronic direct injection foam proportioning system furnished and installed on the apparatus for the front bumper discharge and the three crosslay pre connects. The system shall be capable of Class A foam concentrates and most Class B foam concentrates. The proportioning operation shall be based on an accurate direct measurement of water flows with no water flow restriction. The proportioning system shall meet NFPA standards for foam proportioning systems and the design shall have passed testing against SAE automotive reliability standards appropriate for the application. The foam system shall be installed in accordance with the manufacturer recommendations.

The system shall be equipped with a digital electronic control display. It shall be installed on the pump operators panel and enable the pump operator to perform the following control and operation functions:

- Activate the foam system.
- Change foam concentrate proportioning rates from .1% to 3% in .1% increments.
- From discharges plumbed after the paddlewheel type flow meter: show current flow in gpm, show total volume of water pump, show total amounts of foam concentrate used.
- Provide simulated flow for manual operation.
- Perform set-up and diagnostic functions.
- Flash a "low-concentrate" warning for two minutes when the foam concentrate tank(s) run low of concentrate.
- Flash "no concentrate" warning if foam concentrate tank was not changed or foam concentrate was not added to the low tank and shut down foam concentrate pump.

The display shall have the capabilities when using a Hypro\FoamPro manual or electronic dual tank switching system of the following additional functions:

- Display which foam concentrate tank is selected (tank A: PA or tank B: PB)
- Separate default setting for foam concentrate injection rate.
- Total amount of foam concentrate used from selected tank.
- Dual foam concentrate foam pump calibration.

The foam system shall have a 12 volt, 3/4 hp "TENV" electric motor designed for wet and high humidity environments, direct coupled to a positive displacement piston type foam pump with a rated capacity of .01 to 5.0 gpm with operating pressures up to 400 psi.

The foams system shall be plumbed to two 1.5" speedlay discharges, one 2.5" speedlay discharge, and one 1.5" front bumper discharge.

Directional Light Bar

A Federal SML-6 Signal Master light bar with amber lens shall be installed at rear of the apparatus as specified. 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

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.

Mini Light Bar

A Federal Signal JLX2103 and a Federal Signal JLX 2104 21" LED JetStream light bars containing six SOL 9 red LED Solaris reflectors shall be provided with clear domes and no rear lighting.

The lightbar(s) shall be installed in the following location: one each side, side-facing, behind forward light bar.

Siren Speaker

Two Federal model MS100 Dynamax 100 watt speakers shall be flush mounted as far forward and as low as possible on the front of the unit. The speakers shall meet NFPA requirements for sound output producing a minimum 120 dB of sound at 10 feet. 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 speakers shall be located side-by-side in the center of the front bumper.

Federal Q2B Siren

A chrome plated flush mounted Federal Q2B-NN coaster siren shall be installed in the officer side front bumper. The siren shall be operated from a floor mounted foot switch. An electric siren brake switch shall be located on the switch panel.

Chrome Fire Bell

A chrome fire bell with eagle shall be installed on the extended front bumper. The bell shall have a lanyard installed at the right front seat for operation.

Body Wiring

All body 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 Apparatus Standard. Twisted-pair shielded wire shall be provided within the electrical system for noise reduction.

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 along the entire run. All wiring shall be mounted so as to provide protection from water and heat. 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. Gold contacts shall be used for superior connectivity and improved performance. All wiring looms shall be properly supported and attached along the entire run. At any point where wire or looms must pass through holes in metal, rubber grommets shall be installed in the holes to protect the wire from abrasion.

Wiring shall be individually and permanently function-labeled and color-coded every three inches on the insulation to allow for easy identification.

The distribution panel shall be located so as not to reduce useable compartment space. An electrical harness quick-disconnect connection shall be provided to facilitate removal of the body in the future. All circuits shall be protected with automatic reset circuit breakers to ensure reliability of the system.

All electrical equipment switches shall be mounted on a switch panel mounted in the cab convenient to the operator. Emergency warning light switches shall be of the rocker type. 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.

Main Control System

The apparatus shall have an in-vehicle electrical networking system, also known as multiplexing, to provide real-time or current-state diagnostic capability and reduce troubleshooting or down time when compared to a standard point-to-point wiring scheme system, due to the unique features and capabilities of a multiplexed electrical system.

The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939.

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

- Universal System Manager (USM) containing the main processor and load manager.
- Integrated load management functions such as load shedding
- Self-contained LED diagnostic indicators:
 - PWR for input power status (red)
 - BUS for output power status (yellow)
 - COM for communication status (green)

- Power Distribution Module - input/output modules
- Switch input capability
- Solid-state circuitry
- Responsible for lighting device activation
- Diagnostic display for warning message indication
- Vocation Module to allow for failsafe pumping operations in the event of a fault occurrence within the multiplex system.

The electrical system shall be pre-wired for computer modem accessibility to allow service personnel to easily plug in a modem and phone line to allow remote diagnostics, troubleshooting, or program additions.

There shall be a diagnostic display provided in the cab. The diagnostic display shall allow for fault and condition messages to be displayed providing the operator with detailed messages, such as which compartment door is ajar. The display shall allow for complete diagnostic capability without the use of additional hardware or software.

Non-Warning Lighting

Clearance lights and reflectors shall be installed in conformance to the latest Federal DOT standards. Clearance lights and reflectors shall include two red clearance lights, four red rectangular reflectors, two amber rectangular reflectors, and three red marker lights centered at the rear step, recessed in the rub rail for protection.

There shall be a rectangular-shaped marker light with an amber-colored lens installed on either side of the apparatus body. The marker light shall be wired to the turn indicator. Marker lights shall be recessed in the rub rails at the front of the body for protection.

There shall be a rectangular-shaped marker light with a red-colored lens installed at the trailing edge on either side of the apparatus body. The marker lights shall be recessed in the rub rails for protection.

One 7" red and one 7" clear Weldon model 1010 light shall be installed on each side of the vehicle rear. Light functions shall include running lights, brake lights, turn signal lights, and back-up lights.

There shall be a license plate light installed at the rear of the vehicle.

Two Weldon #2030 lights shall be mounted (top mount panels shall have three lights) under a light shield directly above each pump panel. The work light switch in the cab shall activate the lights when the park brake is set.

Compartment Lighting

One R.O.M. compartment light strip shall be mounted in each body compartment greater than 4 cu ft. Transverse compartments shall have two lights, located one each side.

Each light bar shall include 12" long strips of 24 super bright white LEDs mounted to circuit boards that have acrylic conformal coating for corrosion protection. The LED circuit boards shall be mounted to an extruded aluminum base with lexan lens.

Compartment lights shall be wired to a master on/off rocker switch on the cab switch panel.

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.

Step Lights

There shall be a minimum of one recessed 4" light with a clear lens provided to illuminate the rear step area. Step lights shall be activated with the work lights switch in cab when the park brake is set. (Top mount applications shall include the transverse walkway).

The apparatus shall have sufficient lights to properly illuminate the work areas, steps, walkways, and ground areas around the apparatus in accordance with current NFPA requirements. Areas under the driver and crew area exits shall be activated automatically when the exit doors are opened. Ground area lights shall be switched from the cab dash with the work light switch.

Back-up Alarm

There shall be an electronic back-up alarm supplied at the rear of the apparatus. The 97 dB(A) alarm shall be wired into the chassis back-up lights to signal when the vehicle is in reverse.

Electrical System Load Manager

The vehicle's electrical system shall be equipped with an integrated load management device known as the Universal System Manager (USM). The USM shall be a one-touch device designed so that it shall be protected against reverse voltage and electrostatic damage.

Integrated load management functions shall be as follows:

- Eight electrical load priorities, #0 through #7
- The sequence of load shedding shall start with #7 and proceed in order to #1 and with #0 never shedding. Sequencing of loads shall be at 1/20.5 second intervals.

Electrical load shedding shall be tied through the parking brake. Electrical loads shall shed only during stationary operations. Only devices not required for stationary operation, in accordance with current NFPA requirements, will be available for load shedding. Electrical loads shed during stationary operation will be reactivated when the park break is released.

Automatic fast idle activation shall occur before load shedding. The fast idle shall automatically activate whenever the parking brake is set and the system voltage drops below 12.8 volts for at least one 1 minute. The fast idle is to remain on for a minimum of ten minutes and until a minimum of 13.0 volts is achieved. The fast idle function is to be automatically canceled if the park brake is released, there is loss of neutral safety, pump is shifted into gear, or the service brake is depressed.

The load manager system shall include the following features:

- Digital display for diagnostics and status information
- Test button to cycle all loads and the ability to verify load shedding sequences without draining the battery

- Override switch shall be provided, with label, to override operation of the management system, per NFPA requirements.

The apparatus low voltage electrical system shall be tested in accordance with current NFPA requirements. A third third-party testing service shall perform testing and certification.

Multiplex Modem Kit

A kit shall be supplied to include modem, adapter for 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.

Electronic Siren

A full featured 200 watt electric siren shall be supplied. The siren shall have dual control heads so the driver and officer can conveniently access complete siren control including power up. The control heads shall communicate to the siren amplifier utilizing serial communication protocol over standard Ethernet cables. Each siren control head shall be 9" x 2 1/4" and integrated into the chassis control panels. The solid state 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. The switch display panels shall be back lit and labeled for easy identification. Operating modes shall include Hi-Lo, yelp, wail, and air horn sounds.

A remote microphone control panel shall be supplied to avoid a microphone cord hanging down into the driver's line of sight. The remote panel shall have a noise cancelling microphone and volume control knob.

Clamshell Switch

A heavy-duty metal clamshell switch shall be installed on the officer side engine cover to operate the air horns.

Air Horn Switch

A heavy duty, weatherproof, push button switch shall be installed at the pump operator's panel to operate the air horns.

License Plate Light

One light shall be installed on the rear of the vehicle.

Federal QuadraFlare QL64 LED Lights

Two Federal Signal QL64 LED light heads with amber lens shall be provided. The rectangular flashing lights shall be wired with weatherproof connectors and shall be surface mounted below the red LED lights, back of body.

Federal QuadraFlare QL64 LED Lights

Two pairs of Federal Signal QL64 LED light heads with red lens shall be provided. The rectangular lights shall be wired with weatherproof connectors and shall be surface mounted, one each side at the upper body rearward, side facing, and one each side, side-facing, above ALS doors at back of cab. Lights are to be switched with upper level warning lighting system.

Federal QuadraFlare QL97 LED Lights

Two Federal Signal 9x7 LED light heads with red lenses shall be provided. The rectangular flashing lights shall be wired with weatherproof connectors and shall be surface mounted at the top of the body, rear facing, up high. The lights shall be switched with the upper warning level lighting system.

Federal QuadraFlare QL97 LED Lights

Two Federal Signal 9x7 LED light heads with clear lenses shall be provided. The rectangular lights shall be wired with weatherproof connectors and shall be surface mounted behind the front cab doors, both sides. The lights shall be set to “steady on”.

Lower Level Warning Lights

Eight Federal Signal QL64XF-R LED light heads & 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 centrally located to provide mid ship warning lighting and one each side at the forward most point (as practical)
- Two Model 3300-04 LED light heads shall be mounted one each side at the rearward most point.

An additional pair of Model 3300 LED light heads shall be mounted in the rub rail of the pump module, switched with the lower level warning lighting.

The side facing lights shall be located in the center of the wheel well, and in the rear rub rail.

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

One Intelli-flash series flashers shall be provided.

Hose Bed Light

Two Federal Signal 9x7 LED light heads with clear lenses shall be provided. The rectangular lights shall be wired with weatherproof connectors and shall be located in the hose bed to provide as much light as possible. The lights shall be set to “steady on”.

Deck Light Wired to Back-up

The rear deck lights shall be activated when the chassis is placed in reverse to provide additional lighting, in addition to the back-up lights, when backing the vehicle.

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.

Power Point

A plug-in type cigarette-lighter style receptacle (for use with hand held spotlights, cell phones, chargers, etc.) shall be installed. Three shall be located on the cab dash, and four shall be located in the ALS compartment.

Rear Body Camera/Monitor

A Safety Vision Back Up Camera system consisting of Safety Vision model SV-620 camera with Safety Vision SV-LCD68 color monitor, and the SV-LCDCB control box shall be installed. The monitor shall be installed on the front console area visible at night and in bright sunlight to the driver. The camera shall be mounted up high at the rear of the vehicle to provide a wide angle rear view. The system shall include a cable with metallic waterproof threaded o-ring seal connectors to ensure positive connection between video cable and camera to prevent unplugging due to vibration resulting in video loss to vehicle operator.

Microphone Box

Cast Products microphone box, model #EB0001, shall be located on the rear of the cab, up high, facing the crosswalk, recessed into the ALS cabinet.

Internal box dimensions shall be approximately 13.75" wide x 7.75" high x 6" deep. A brushed finish aluminum hinged door with a positive catch latch shall be provided.

Generator

An Onan 10KW side draft hydraulic generator, model #10RBAA, shall be provided and installed in a location approved by the customer.

The unit shall come equipped with: modular generator unit (which includes the hydraulic motor and filter, generator, and cooler), variable displacement hydraulic pump, hydraulic reservoir & a gauge panel.

The gauge panel shall display voltage, hour meter, frequency, and amperage.

The hydraulic motor, generator, blower, cooler, and necessary hydraulic components are enclosed in a stainless steel housing. The housing is lined with acoustical material to reduce noise levels.

The modular generator unit shall be 32.00" long x 15.80" wide x 13.70" high and weigh approximately 179 pounds.

The reservoir shall be mounted separately.

The hydraulic pump shall be driven by a chassis transmission mounted power take off (PTO).

A PTO engage switch and Generator Control switch shall be mounted on the cab instrument panel to engage the PTO and start the generator.

Ratings and Capacity

Rating:	10,000 watts continuous
Volts:	120/240 volts
Phase:	Single, 4 wire
Frequency:	60 Hz
Amperage:	83.30 amps @ 120 volts or 41.60 amps @ 240 volts
Engine speed at engagement:	Below 1000 RPM
Operation range:	975 to 2500 RPM 600 to 2500 RPM Aerial Only

The generator shall be tested operating at 100 percent of its name plate voltage for a minimum of two hours in accordance with current N.F.P.A. 1901 standards.

Duplex Receptacle

Two 20 amp, 110-volt (NEMA #L5-20) household receptacle with stainless steel cover plate shall be installed in the ALS compartment. The receptacle shall be wired to the inlet receptacle where it will have over-current protection from an external source.

Twist Lock Receptacle

A 20 amp, 220 volt twist lock receptacle (NEMA #L6-20) with a weatherproof cover plate shall be installed one on each side on the back of cab.

Telescopic Quartz Light on Tripod

Two Kwik-Raze model 36 Magnafire quartz light heads with 750-watt, 120-volt halogen bulb rated at 19,200 Lumens mounted on Kwik-Raze model 800 top raising aluminum telescopic tripod poles with up indicator switch.

The light assemblies shall be externally mounted as specified. The pole shall allow for 360-degree rotation of the light and shall have a locking knob to hold the pole at the desired height and a release latch shall be provided to allow the light to also be used as a portable free standing tripod unit. An on/off switch shall be provided on the light.

Location: one on each side on the back of cab.

Recessed Quartz Light

A Kwik-Raze model 36 Magnafire quartz light head with 750-watt, 120-volt halogen bulb rated at 19,200 Lumens mounted in a Kwik-Raze model 1900 recessed housing with a 10 degree downward angle.

The light assembly shall be recessed in the sides of the body, two each side; one forward, one rearward. A second pair of recessed lights shall be mounted in the back of the body, midway up, above the taillight bezels.

Quartz Light

A Kwik-Raze model 36 Magnafire quartz light head with 750-watt, 120-volt halogen bulb rated at 19,200 Lumens mounted on a Kwik-Raze model KR1536 E-One custom cab permanent mount housing.

The light assembly shall be mounted one each side on the front of cab.

Breaker Panel

A twenty place breaker box with up to twenty 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 compartment L1, not to exceed 12' run of wire.

Dimensions: 20.92" high x 14.25" wide x 3.75" deep.

Electric Cord Reel

A permanently mounted Hannay model ECR 1616-17-18 electric rewind electric cord reel with 200' of yellow 10 gauge 3 conductor type SOWA cord 20 amps @ 110 volts shall be installed in the left rooftop compartment, towards the rear. The cord shall be terminated at the end, and shall exit through the ceiling of R3 compartment. A rewind button shall be installed as specified.

Electric Cord Reel

A permanently mounted Hannay model ECR 1616-17-18 electric rewind electric cord reel with 200' of yellow 10 gauge 3 conductor type SOWA cord 20 amps @ 110 volts shall be installed in the left rooftop compartment, towards the rear. The cord shall be terminated at the end, and shall exit through the ceiling of L3 compartment. A rewind button shall be installed as specified.

Cord Reel Rollers

Stainless steel rollers shall be installed for the electric rewind cord reel to facilitate smooth removal of the electrical cord.

Circle D Junction Box with Wall Mount

Two Circle D PF51F-3 power boxes with two 15 Amp 110-Volt twist lock receptacle's NEMA L5-15, and two 15 Amp 110-Volt household receptacles NEMA L5-15 shall be hardwired to the cord reel. The receptacles shall be enclosed in a UL listed, NEMA Type 3R cast aluminum box with aluminum finishes and NFPA required indicator light.

Brow Light Switch

Relays shall be provided to allow operation of the brow lights from remote locations other than the breaker box. The relays shall be mounted in a weather resistant enclosure mounted near the breaker box. Remote switches shall be mounted in the officer and driver side overhead.

3rd Party Generator Testing

The generator shall be tested at the manufacturer's facility by an independent, third-party testing service. The conditions and testing of the generator shall be as outlined in current NFPA 1901.

The test shall include operating the generator for two hours at 100% of the rated load. Power source voltage, amps, frequency shall be monitored. The prime mover's oil pressure, water temperature,

transmission temperature (if applicable) and power source hydraulic fluid temperature (if applicable) shall be monitored during testing.

The results of the test shall be recorded and provided with delivery documentation.

Compartment Interior Swirl Finish

The compartment ceiling, walls and inner door pan shall have a swirl finish for the following compartments: L1, L2, L3, R1, R2, R3, B1.

DOT Required Drive Away Kit

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

Scotchlite Striping

A 6” red Scotchlite stripe shall be applied to the cab and body with a 2” stripe applied 1” above and below.

Rear body chevron striping shall be applied in an alternating Red/White “A” pattern. Striping shall cover rear body and rear compartment doors.

SignGold Lettering

Sixty SignGold letters with shade shall be applied to the cab and body per department instruction.

Cab Paint

The cab and chassis shall be painted L006EG white with 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 aluminum 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 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. .

The chassis frame and undercarriage components shall be finished painted with a urethane chassis black system.

The vehicle wheels shall be painted to match the exterior color of the vehicle unless otherwise specified.

Interior Cab Paint Finish

The interior of the cab shall be painted OTO Gray.

Body Paint Finish

The apparatus body shall be painted L006EG white with 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, doorjamb, 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.
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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.

Statement of Warranty

One Year Standard

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.

Frame Warranty

Lifetime Frame

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.

Structural Warranty

Ten Year/100,000 Mile Structural

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.

Plumbing Components Warranty

Ten Year Stainless Steel Plumbing Components

The apparatus manufacturer shall provide a full ten 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.

Paint and Corrosion Warranty

Ten Year Limited Paint and Corrosion Perforation

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.

Electronic Manuals

Two copies of all operator, service, and parts manuals MUST 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 must 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

EMS 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)

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