NOTICE TO BIDDERS
RESCUE PUMPER TRUCK

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

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MINIMUM SPECIFICATIONS
MULTI PURPOSE RESCUE PUMPER TRUCK

INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to cover the furnishing and delivery of a complete apparatus equipped as hereinafter specified. These specifications cover only the general requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. Loose equipment shall be provided only as stated in the following pages.

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 20 years. Further, bidder shall maintain dedicated service facilities for the repair and service of products. Evidence of such a facility shall be included in bidder proposal.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built. The bidder shall also show that the company is in position to render prompt service and to furnish replacement parts for said apparatus.

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

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.

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.

QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility of the various units which require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under "Performance Tests and Requirements". Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any component part for service or repair. All steel welding shall follow American Welding Society D1.1-2004 recommendations for structural steel welding. All aluminum welding shall follow American Welding Society and ANSI D1.2-2003 requirements for structural welding of aluminum. All sheet metal welding shall follow American Welding Society B2.1-2000 requirements for structural welding of sheet metal. Flux core arc welding to use alloy rods, type 7000, American Welding Society standards A5.20-E70T1. Employees classified as welders are tested and certified to meet American Welding Society codes upon hire and every three years thereafter. The manufacturer shall be required to have an American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

DELIVERY

Apparatus, to insure proper break in of all components while still under warranty, **shall be delivered under its own powe**r - rail or truck freight shall not be acceptable. A qualified delivery engineer representing the contractor shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in the proper operation, care and maintenance of the equipment delivered.

We desire to receive both completed apparatus within 260 Calendar Days of award. The contractor shall state in their proposal their ability to meet such delivery, or offer an alternative schedule. Time being of the essence for this purchase, whatever schedule is agreed upon between the contractor and purchaser.

PRE-CONSTRUCTION CONFERENCE

A meeting shall be held at the contractor’s facility within 60 days after the contract has been executed so that all specifications, details, drawings, questions and engineering work can be reviewed and approved by the county. This meeting shall not in any way delay the construction of the apparatus. The meeting shall be held prior to the commencement of any work being done on the apparatus. The responsible persons shall be in attendance at the conference to authorize decisions on the behalf of the contractor and or its dealer. Signed approvals by authorized personnel from the county shall be given to the manufacturer within 10 working days and prior to any work being started. It is understood that delays in obtaining approval signatures may delay construction.

There shall be no exception to the pre-construction meeting requirements.

INFORMATION REQUIRED

The manufacturer shall supply at time of delivery, complete operation and maintenance manuals covering the completed apparatus as delivered. A permanent plate shall be mounted in the driver's compartment which specifies the quantity and type of fluids required including engine oil, engine coolant, transmission, pump transmission lubrication, pump primer and drive axle.

SAFETY VIDEO

Documentation provided at the time of delivery shall also include an apparatus safety video, in DVD format. This video shall address key safety considerations for personnel to follow when they are driving, operating, and maintaining the apparatus. Safety procedures for the following shall be included: vehicle pre-trip inspection, chassis operation, pump operation, and maintenance.

PERFORMANCE TESTS AND REQUIREMENTS

A road test shall be conducted with the apparatus fully loaded and a continuous run of ten miles or more shall be made under all driving conditions, during which time the apparatus shall show no loss of power or overheating. The transmission drive shaft or shafts, and rear axles shall run quietly and be free from abnormal vibration or noise throughout the operating range of the apparatus. Vehicle shall adhere to the following parameters:

A) The apparatus, when fully equipped and loaded, shall have not less than 25% or more than 50% of the weight on the front axle, and not less than 50% or more than 75% on the rear axle.

B) The apparatus shall be capable of accelerating to 35 mph from a standing start within 25 seconds on a level concrete highway without exceeding the maximum governed rpm of the engine.

C) The service brakes shall be capable of stopping a fully loaded vehicle in 35 feet at 20 mph on a level concrete highway. The air brake system shall conform to Federal Motor Vehicle Safety Standards (FMVSS) 121.

D) The apparatus, fully loaded, shall be capable of obtaining a speed of 50 mph on a level concrete highway with the engine not exceeding its governed rpm (full load).

FAILURE TO MEET TEST

In the event the apparatus fails to meet the test requirements of these specifications on the first trial, second trials may be made at the option of the bidder within 30 days of the date of the first trial. Such trials shall be final and conclusive and failure to comply with these requirements shall be cause for rejection. Failure to comply with changes to conform to any clause of the specifications, within 30 days after notice is given to the bidder of such changes, shall also be cause for rejection of the apparatus. Permission to keep or store the apparatus in any building owned or occupied by the purchaser or its use by the purchaser during the above-specified period with the permission of the bidder shall not constitute acceptance.

VEHICLE STABILITY

The stability of the vehicle shall be demonstrated by performing like product testing on tilt table testing. Vehicle shall be able to withstand up to 27 degrees, fully loaded before tires lift. Test documents shall be made available if requested. Actual like product testing must have been done. Calculations shall not be acceptable.

LIABILITY

The successful bidder shall defend any and all suits and assume all liability for the use of any

patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

SPECIFICATION BID REQUIREMENTS

Bidders shall also indicate in the COMMENT SECTION of the bid form any area that does not comply with specifications. Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page.

Proposals taking total exception to specifications shall not be acceptable.

Bidders shall submit a detailed description of the equipment being proposed in the same sequence as in the specifications. A letter only, even though written on a company letterhead, shall not be sufficient. **(NO EXCEPTION)**

EXCEPTIONS

All exceptions shall be stated no matter how seemingly minor. Any exceptions not taken shall be assumed by the purchaser to be included in the proposal, regardless of the cost to the bidder.

GENERAL CONSTRUCTION

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

COMMERCIAL GENERAL LIABILITY INSURANCE

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

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

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

COMMERCIAL AUTOMOBILE INSURANCE

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

- Each Accident: $1,000,000

Coverage shall be written on a Commercial Automobile form.

UMBRELLA/EXCESS LIABILITY INSURANCE

The successful bidder shall, during the performance of the contract and for three years following

acceptance of the product, keep in force at least the following minimum limits of umbrella liability insurance:

- Aggregate: $25,000,000
- Each Occurrence: $25,000,000

The umbrella policy shall be written on an occurrence basis and at a minimum provide excess to the Bidder's General Liability, Automobile Liability and Employer's Liability policies. Owner shall be included as an additional insured on the General Liability policy as their interest may appear.

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

Coverage shall be provided by a carrier(s) rated A- or better by A.M. Bests.

Bidder agrees to furnish owner with a current Certificate of Insurance with the coverage listed above along with its bid. The certificate shall be made out to the purchaser. The Certificate of Insurance shall endeavor to provide that owner be given 30 days advance notice of cancellation or non-renewal change in coverage.

ISO COMPLIANCE

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, installation and service. A copy of the certificate of compliance shall be included with the bid.

NFPA 2004 STANDARDS

This unit must comply with the NFPA standards effective January of 2004.

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

A plate that is highly visible to the driver while seated shall be provided. This plate shall show the overall height, length, and gross vehicle weight rating.

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

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

NFPA COMPLIANCY

Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution.

TOTAL VEHICLE ASSESSMENT CERTIFICATION

The apparatus shall be third-party, independent, audit-certified to the current edition of NFPA 1901 standards. The certification includes: all design, production, operational and performance testing of the apparatus. (**NO EXCEPTIONS**).

PUMP TEST

The pump shall be tested, approved, and certified at the manufacturer's expense. The test results and the pump manufacturer's certification of hydrostatic test; the engine manufacturer's certified brake horse power curve; and the manufacturer's record of pump construction details shall be forwarded to the Fire Department.

GENERATOR TEST

If the unit has a generator, the generator shall be tested, approved, and certified at the manufacturer's expense. The test results shall be provided to the Fire Department at the time of delivery.

BREATHING AIR TEST

If the unit has breathing air, an air sample shall be drawn from the air system and certify that the air quality meets the requirements of NFPA 1989, *Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection.*

APPROVAL DRAWING

A drawing of the proposed apparatus shall be provided for approval before construction begins. The sales representative shall also have a copy of the same drawing. The finalized and approved drawing shall become part of the contract documents. This drawing shall indicate the chassis make and model, location of the lights, siren, horns, compartments, major components, etc.

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

SERVICE FACILITY

The contractor and / or its dealer shall maintain a dedicated service facility with 24 Hour Mobile Service along with ASE / EVT Trained Mechanics for the repair and service of this vehicle. The service center shall be located within 100 miles of Pace Fire Department. Evidence of such a facility shall be included in the contractor’s proposal along with the certificates of the ASE / EVT Trained Mechanics**. (NO EXCEPTIONS)**

WARRANTY

Each piece of new fire or rescue apparatus shall be warranted to be free from defects in materials or workmanship under normal use and service. Each manufacturer shall supply, as a part of their bid package, a copy of the warranty or warranties that they propose to provide, and in no case shall it be less than **one year** on the entire apparatus.

All other warranties, as outlined in these specifications shall be provided in writing as a part of the bid package.

Failure to provide the warranties as outlined throughout these specifications shall be cause for rejection of the bid package.

WARRANTY 3-YEAR CUSTOM CHASSIS

Each new custom chassis shall be warranted to be free from defects in materials or workmanship under normal use and service. Each manufacturer shall supply on company letterhead, as part of their bid package, a copy of the detailed warranty or warranties that they propose to provide, and in no case shall the custom chassis warranty be less than 3 years. It shall include as the minimum the A/C, defroster and heater systems, spring suspension components, independent suspension components, steering gears on the independent suspension, gauge instrumentation, seats, instrument consoles, and a $10,000 collateral damage warranty on the transmission cooler. The electrical system, cab structural, engine, transmission, frame and cross-members are to be covered under separate warranties throughout these specifications.

Failure to provide the warranties as outlined throughout these specifications shall be cause for rejection of the bid package.

CROSSMEMBERS WARRANTY

A Lifetime parts and labor warranty shall be provided on all chassis frame cross-members.

WARRANTY REPAIRS

All work performed during the warranty period shall be the sole responsibility of the contractor / and or its dealer. All warranty work will be performed at the local fire department by the contractor / and or its dealer with no cost incurred to the local fire department. If the apparatus cannot be repaired at the local fire department during this warranty period, the apparatus will go the service center located within the 100 mile radius. All repair work done during the warranty period must be completed in less than 24 hours after notification. **(NO EXCEPTIONS)**

TESTING OF BODY DESIGN

Body structural analysis has been fully tested. Proven engineering and test techniques such as finite element analysis, stress coating and strain gauging shall be performed with special attention given to fatigue, life and structural integrity of the cab, body and substructure.

Body shall be tested while loaded to its greatest in-service weight.

The criteria used during the testing procedure shall include:

Evidence of actual testing techniques shall be submitted with the contractor's proposal.

CHASSIS

The chassis provided shall be a new, tilt-type custom fire apparatus. The chassis shall be manufactured in the apparatus body builder's facility, eliminating any split responsibility. The chassis shall be designed and manufactured for heavy-duty service, with adequate strength and capacity for the intended load to be sustained and the type of service required.

SEATING CAPACITY

The seating capacity in the cab shall be six.

WHEELBASE
The wheelbase of the vehicle shall be no greater than 212".

GVW RATING
The gross vehicle weight rating shall be a minimum of 49,800#.

FRAME
The chassis frame shall be built with two steel channels bolted to five cross-members or more, depending on other options of the apparatus. The side rails shall have a 13.38" tall web over the front and mid sections of the chassis, with a continuous smooth taper to a 10.75" over the rear axle. Each rail shall have a section modulus of 25.992 cubic inches and a resisting bending moment (rbm) of 3,119,040 inch pounds over the critical regions of the frame assembly, with a section modulus of 18.96 cubic inches with an rbm of 2,275,200 inch pounds over the rear axle. The frame rails shall be constructed of 120,000 psi yield strength heat treated .38" thick steel, with 3.50" wide flanges.

FRAME RAIL WARRANTY
The frame rails shall be guaranteed for the **life of the vehicle,** which is the estimated to be 50 years, against defects in design, material or workmanship, excluding accident or abuse. A copy of the fire apparatus manufacturer's warranty shall be included with the bid.

FRAME REINFORCEMENT
In addition, a main frame inverted "L" liner shall be provided. It also shall be heat treated steel measuring 12.00" x 3.00" x .25". Each liner shall have a section modulus of 7.795 cu. in., yield strength of 110,000 psi and rbm of 857,462 inch pounds. Total rbm at wheelbase center shall be 3,976,502 pounds per rail.

The frame liner shall be mounted inside of the chassis frame rail and extend the full length of the frame.

FRONT NON DRIVE AXLE
The front axle shall be of the independent suspension design with a ground rating of 22,800 pounds.

The turning angle shall be 45 degrees.

FRONT NON DRIVE AXLE WARRANTY
The non drive axle system shall have a **three year** parts and labor warranty. This warranty applies to the independent suspension components only. All steering linkages, pumps etc., are covered under our standard chassis warranty (exception steer gears - see Steering for warranty).

OIL SEALS
Oil seals with viewing window shall be provided on the front axle.

SHOCK ABSORBERS
Heavy-duty telescoping shock absorbers shall be provided on the front suspension.

REAR AXLE
The rear axle shall have a capacity of 27,000 pounds.

A **two year, unlimited mileage, parts and labor** warranty shall be provided with this axle.

TOP SPEED OF VEHICLE
A rear axle ratio shall be furnished to allow the vehicle to reach an approximate top speed of 70 MPH.

OIL SEALS
Oil seals shall be provided on the rear axle.

SUSPENSION
Front independent suspension shall be provided with a minimum ground rating of 22,800 pounds.

SUSPENSION, REAR
The rear suspension shall be a semi-elliptical, 3.00" wide x 53.00" long, 12-leaf pack with a ground rating of 27,000 lbs. The spring hangers shall be castings.

The two top leaves shall wrap the forward spring hanger pin, and the rear of the spring shall be a slipper style end that will ride in a rear slipper hanger. To reduce bending stress due to acceleration and braking, the front eye shall be a berlin eye that will place the front spring pin in the horizontal plane within the main leaf.

A steel encased rubber bushing will be used in the spring eye. The steel encased rubber bushing shall be maintenance free and require no lubrication.

ANTI-LOCK BRAKE SYSTEM
The vehicle shall be equipped with an anti-lock braking system. The ABS shall provide a four channel anti-lock braking control on both the front and rear wheels. It shall be a digitally controlled system that utilizes microprocessor technology to control the anti-lock braking system. Each wheel shall be monitored by the system. When any particular wheel begins to lockup, a signal shall be sent to the control unit. This control unit then shall reduce the braking of that wheel for a fraction of a second and then reapply the brake. This anti-lock brake system shall eliminate the lockup of any wheel thus helping to prevent the apparatus from skidding out of control.

ANTI-LOCK BRAKE SYSTEM WARRANTY
The ABS system shall come with a **three year or 300,000 mile parts and labor** warranty provided by ABS manufacturer.

BRAKES
The service brake system shall be full air type. The front brakes shall be disc type.

The rear brakes shall be 16.50" x 7.00" cam operated with automatic slack adjusters.

ENGINE BRAKE
An engine brake is to be installed with the controls located on the instrument panel within easy reach of the driver.

The driver shall be able to turn the engine brake system on/off and have a high and low setting.

The engine brake shall be installed in such a manner that when the engine brake is slowing the vehicle the brake lights are activated.

The ABS system shall automatically disengage the auxiliary braking device, when required.

AIR COMPRESSOR, BRAKE SYSTEM
The air compressor shall have 18.7 cubic feet per minute output.

BRAKE SYSTEM
The brake system shall include:

- Dual brake treadle valve with vinyl covered foot surface
- Heated automatic moisture ejector
- Total air system capacity of 4,362 cubic inches
- Two air pressure gauges with red warning light and audible alarm that activates when air pressure falls below 60 psi
- Spring set parking brake system
- Parking brake operated by a control valve
- A parking "brake on" indicator light on instrument panel
- A double check valve system to provide automatic spring brake application at 40 psi
- Air Dryer properly sized for the brake system.

BRAKE LINES
Color coded nylon brake lines shall be provided. The lines shall be wrapped in a heat protective loom where necessary in the chassis.

AIR INLET
One air inlet with male coupling shall be provided. It shall allow station air to be supplied to the apparatus brake system through a shoreline hose. The inlet shall be located in the driver side cab step area. A check valve shall be provided to prevent reverse flow of air. The inlet shall discharge into the "wet" tank of the brake system. A mating female coupling shall also be provided with the loose equipment.

AIR OUTLET
One air outlet shall be installed with a female coupling and shut off valve, located on the driver side of pump panel. This system shall tie into the "wet" tank of the brake system and include an 85 psi pressure protection valve in the outlet line to prevent the brake system from losing all air.

A mating male fitting shall be provided with the loose equipment.

ENGINE

The chassis shall be powered by an electronic diesel engine as described below:

- Number of Cylinders: Six
- Bore and Stroke: 4.49" x 5.69"
- Displacement: 543 cubic inches
- Maximum Horsepower: 425 hp at 2100 rpm
- Torque: 1200 lb-ft at 1300 rpm
- Compression Ratio: 16.6:1
- Governed rpm: 2200.

Standard equipment on the engine shall include the following:

- Air Cleaner
- Fuel Filters: Dual, with check valve, integrated water separator, and water in fuel sensor
- Coolant Filter: Spin-on with shut off valves on the supply and return line
- Governor: Limiting speed type
- Injectors: Cam operated, unit type, clean tip
- Lube Oil Cooler
- Lube Oil Filter: Full flow
- Starting Motor: 12-volt
- Turbocharger
- Charge Air Cooled
- Priming Pump.

REPTO DRIVE

A rear engine power take off shall be provided to drive the water pump. Transmission PTO's used to drive the water pump shall not be allowed due to their lower torque ratings. The rear engine power take off shall be the same as used extensively throughout the construction industry. Rear engine PTO's allow for 200 hp and 435 lb-ft torque ratings needed for large pump applications. The rear engine power take off shall have the same warranty as the engine provided by the engine manufacturer.

ENGINE WARRANTY

The engine shall have a **five year or 100,000 mile** warranty provided by the engine manufacturer. This warranty shall provide the same coverage for the Diesel Particulate Filter "DPF" that is an integral component of the exhaust emissions system. The engine manufacturer shall add a $100.00 deductible during the extended basic coverage period in years 3, 4, and 5. There shall be no deductible in the first two years of warranty.

ENGINE INSTALLATION CERTIFICATION

The fire apparatus manufacturer shall provide, at the time of bid, a letter from the engine manufacturer stating they approve of the engine installation in the bidder's chassis. The approval of the engine installation shall be at full horsepower rating in a continuous duty application under all operating conditions, including road and pump. No type of automatic horsepower reduction feature shall be allowed.

There shall be no exception to any portion of the engine installation certification. Nonconformance shall lead to immediate rejection of bid.

CONTROLS AND INDICATOR LIGHTS

The following amber indicator lights shall be located on the driver's side of the cab to denote engine information:

- Diesel Particulate Filter (DPF)
- High Exhaust Temperature (HET).

A switch to initiate the diesel particulate filter regeneration cycle shall be located on the driver's side instrument panel.

ENGINE AIR INTAKE

An air intake with an ember separator (to prevent road dirt, burning embers, and re-circulating hot air from entering the engine) shall be mounted at the front of apparatus, on the passenger side of the engine. The ember separator shall be mounted in the air intake with a flame retardant, roto-molded polyethylene housing, and be easily accessible by the hinged access panel at the front of the vehicle.

EXHAUST SYSTEM

The exhaust system shall be constructed of stainless steel from the turbo to the inlet of the diesel particulate filter and shall be 4.00" in diameter. The exhaust system shall include a diesel particulate filter and a diesel oxidation catalyst to meet current EPA standards. The exhaust shall terminate vertically ahead of the water tank to a point above the body. A tailpipe diffuser shall be provided to reduce the temperature of the exhaust as it exits. An insulation wrap shall be provided on the exhaust pipe between the turbo and DPF inlet to minimize the transfer of heat to the cab. Heat deflector shield(s) shall be provided to isolate chassis and body components from the heat of the outlet pipe.

CLUTCH FAN

A fan clutch shall be provided. The fan clutch shall be automatic when the pump transmission is in "Road" and "Pump" position.

HIGH IDLE

A high idle switch shall be provided, inside the cab, on the instrument panel, that shall automatically maintain a preset engine rpm. A switch shall be installed, at the cab instrument panel, for activation/deactivation.

The high idle shall be operational only when the parking brake is on and the truck transmission is in neutral. A green indicator light shall be provided, adjacent to the switch. The light shall illuminate when the above conditions are met. The light shall be labeled "OK to Engage High Idle".

COOLANT LINES

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

Hose clamps shall be stainless steel "constant torque type" to prevent coolant leakage. They shall

react to temperature changes in the cooling system and expand or contract accordingly while maintaining a constant clamping pressure on the hose.

RADIATOR

The radiator and the entire cooling system shall meet or exceed all NFPA cooling system standards, as well as those specified by the engine manufacturer, under all truck operating conditions. The radiator shall be a free floating design to reduce external stress. For visual inspection, the radiator shall have a built-in low coolant sight glass and an electronically controlled low coolant display mounted on the instrument panel. An integral surge and de-aeration tank, with a readily accessible remote mounted overflow tank, shall be provided.

The cooling system shall be designed to maintain a minimum pressure of 13 psi. A drain valve shall be located at the lowest point of the cooling system and at other points to permit complete flushing of the coolant from the system. A heavy-duty fan, shrouded by recirculation shields, shall draw in fresh, cool air through the radiator.

For maximum cooling performance the radiator core shall be made of corrosion resistant aluminum alloy with serpentine fin design. The completed core shall have a minimum of 1430 square inches of cooling area. The radiator shall be mounted in a manner to prevent the development of leaks caused by twisting or straining when the apparatus operates over uneven ground. The radiator core shall be compatible with commercial antifreeze solutions.

There shall be a full steel frame around the entire radiator assembly. This steel frame shall be isolated from the frame rails with rubber in shear isolators. The radiator core shall also be isolated with rubber within the steel frame to enhance cooling system reliability. Crimp on nylon tanks shall serve as the supply and return header. No solder joints, or leaded material of any kind, will be acceptable.

ACCESS TO ENGINE DIPSTICKS

For access to the engine oil and transmission fluid dipsticks, there shall be a door on the engine tunnel, inside the crew cab. The door shall be on the rear wall of the engine tunnel, on the vertical surface. The door shall be 17.75" wide x 12.75" high and be flush with the wall of the engine tunnel.

The engine oil dipstick shall allow for checking only. The transmission dipstick shall allow for both checking and filling. An additional tube shall be provided for filling the engine oil.

The door shall have a rubber seal for thermal and acoustic insulation. One flush latch shall be provided on the access door.

FUEL TANK

A 65 gallon fuel tank shall be provided and mounted at rear of chassis. The tank shall be constructed of 12 gauge, hot rolled steel. It shall be equipped with swash partitions and a vent.

A ¾ " drain plug shall be provided in a low point of the tank for drainage.

A fill inlet shall be located on the driver's side of the body and be covered with a hinged, spring loaded, stainless steel door that is marked "Diesel Fuel Only".

A ½ " diameter vent shall be provided running from top of tank to just below fuel fill inlet.

The tank shall meet all FHWA 393.67 requirements including a fill capacity of 95% of tank volume.

All fuel lines shall be provided as recommended by the engine manufacturer.

FUEL SHUTOFF
A shutoff valve shall be installed in the fuel line, on both sides of the fuel filters.

FUEL COOLER
An air to fuel cooler shall be installed, in the engine fuel return line.

TRANSMISSION
An electronic, torque converting, automatic transmission shall be provided.

Two PTO openings shall be located on left side and top of converter housing (positions 8 o'clock and 1 o'clock).

A transmission temperature gauge with red light and buzzer shall be installed on the cab instrument panel.

TRANSMISSION, SHIFTER
A six speed push button shift module shall be mounted to right of driver on console. Shift position indicator shall be indirectly lit for after dark operation.

The transmission ratio shall be: 1st - 3.51 to 1.00, 2nd - 1.91 to 1.00, 3rd - 1.43 to 1.00, 4th - 1.00 to 1.00, 5th - 0.75 to 1.00, 6th - 0.64 to 1.00, R - 4.80 to 1.00.

TRANSMISSION PROGRAMMING
The transmission shall be programmed to automatically shift the transmission to neutral when the parking brake is set, to simplify operation and increase operational safety. (**NO EXCEPTIONS**)

TRANSMISSION COOLER
A shell and tube transmission oil cooler shall be provided, using engine coolant to control the transmission oil temperature. The cooler shall have an aluminum shell, and copper tubes. The cooler shall be assembled using pressed in rubber tube sheets to mechanically create a reliable seal between the coolant and the oil. No brazed, soldered, or welded connections shall be used to separate the coolant from the oil.

TRANSMISSION COOLER WARRANTY
The **three year** parts, labor, and collateral damage warranty shall be provided with this cooler, plus an additional **two years** of parts and labor only coverage. The collateral damage for the first three years shall not exceed $10,000 per occurrence.

TRANSMISSION WARRANTY
The transmission shall have a **five year/unlimited mileage** warranty covering 100% parts and labor. The warranty is to be provided by Allison Transmission and not the apparatus builder.

DRIVELINE
Drivelines shall be a heavy duty metal tube and be equipped with universal joints.

The shafts shall be dynamically balanced before installation.

A splined slip joint shall be provided in each driveshaft.

STEERING
Dual steering gears, with integral heavy-duty power steering, shall be provided. For reduced system temperatures, the power steering shall incorporate a three line hydraulic pump with integral pressure and flow control.

A tilt and telescopic steering column shall be provided to improve fit for a broader range of driver configurations.

A letter from the hydraulic pump manufacturer, stating they approve of the hydraulic pump selection, its operating temperature and flow, shall be furnished with the bidder's proposal.

STEERING WARRANTY
The steering gear shall have a three year parts & labor warranty.

TIRES
Front tires shall be Michelin radials 425/65R22.50, 20 ply XZY 3 tread The tires shall be mounted on 22.50" x 12.25" polished aluminum disc-type wheels with a ten stud, 11.25" bolt circle.

Rear tires shall be four radials 12R22.50, 16 ply "all position" tread. The tires shall be mounted on 22.50" x 8.25" polished aluminum disc wheels with a ten stud-11.25" bolt circle.

LUG NUT COVERS
Chrome plated lug nut covers shall be installed on all lug nuts.

WHEEL CHOCKS
One set of folding wheel blocks with horizontal mounting brackets shall be provided. The chocks should be mounted on the N/A.

MUD FLAPS
Mud flaps shall be installed behind the front and rear wheels of the apparatus.

CAB
The cab shall be designed specifically for the fire service and shall be manufactured by the chassis builder.

The cab shall be constructed of 5052-H32 aluminum skins on extruded aluminum framing. For increased structural integrity and occupant protection, the cab structure shall include, directly forward of the driver and passenger areas, a .25" firewall plate and .50" lateral support plate that shall tie the forward corner posts to the engine tunnel. The cab roof shall include a heavy one-piece aluminum extrusion with wall thickness up to .12", and shall extend from side to side, and attach to the upper forward corner posts by customized aluminum castings. The sub-structure shall include a .38" wall extrusion under the crew cab floor for support while tilting the cab. To provide quality at the source and single source customer support, the cab shall be built by the apparatus manufacturer in a facility located on the manufacturer's premises. (**NO EXCEPTIONS**)

The cab shall be a full-tilt style to 80 degrees to accommodate engine maintenance and removal. The cab pivots shall be located 46" apart to provide stability while tilting the cab. The cab shall be tilted by an electric over hydraulic pump that is connected to two cab lift cylinders 2.25" in diameter. The cab shall be locked down by a two-point automatic locking mechanism actuated after the cab has been lowered. A three-point cab mount system with rubber isolators shall improve ride quality by isolating chassis vibrations from the cab.

The crew cab shall be a totally enclosed design with the interior area completely open to improve visibility and verbal communication between the occupants.

The forward cab section shall have an overall height (from the cab roof to the ground) of approximately 102.00". The crew cab section shall have a 10.00" raised roof, with an overall cab height of approximately 112.00". The overall height listed shall be calculated based on a truck configuration with the lowest suspension weight ratings, the smallest diameter tires for the suspension, no water weight, no loose equipment weight, and no personnel weight. Larger tires, wheels, and suspension shall increase the overall height listed.

The cab shall have an interior width of not less than 93.50". The driver and passenger seating positions shall have a minimum 24.00" clear width at knee level.

To reduce injuries to occupants in the seated positions, proper head clearance shall be provided. The floor-to-ceiling height inside the forward cab shall be no less than 60.25". The floor-to-ceiling height inside the crew cab shall be no less than 62.75" in the center position and 68.75" in the outboard positions.

The crew cab shall measure a minimum of 57.50" from the rear wall to the backside of the engine tunnel (knee level) for optimal occupant legroom.

STEPS

The forward cab and crew cab access steps shall be a full size two-step design to provide largest possible stepping surfaces for safe ingress and egress. The bottom steps shall be designed with a grip pattern punched into bright aluminum tread-plate material to provide support, slip resistance, and drainage. The bottom steps shall be a bolt-in design to minimize repair costs should they need to be replaced. The forward cab steps shall be a minimum 31.00" wide, and the crew cab steps shall be 24.25" wide with an 8.00" minimum depth. The inside cab steps shall not exceed 18.00" in height and be limited to two steps. Three step entrance designs shall not be acceptable due to safety concerns. A slip-resistant handrail shall be provided adjacent to each cab door opening to assist

during cab ingress and egress.

ENGINE TUNNEL

To provide structural strength, the engine tunnel sidewalls shall be constructed of .50" aluminum plate that is welded to both the .25" firewall and .38" heavy wall extrusion under the crew cab floor. To maximize occupant space, the top edges shall be tapered.

The engine tunnel shall be insulated on both sides for thermal and acoustic absorption. The underside of the tunnel shall be covered with 1.00" thick polyether foam that is reinforced with an aluminized face. Thermal rating for this insulation shall be -40 degrees Fahrenheit to 300 degrees Fahrenheit. The insulation shall keep noise (dB) levels at or lower than the specifications in the current edition of the NFPA 1901 standards.

FENDER LINERS

Full-circular, aluminum, inner fender liners in the wheel wells shall be provided.

REAR WALL COVERING

The exterior surface of the rear wall of the cab shall be overlaid with bright aluminum tread-plate except for areas that are not typically visible when the cab is lowered.

PANORAMIC WINDSHIELD

A one-piece, safety glass windshield with more than 2,802 square inches of clear viewing area shall be provided. The windshield shall be full width and shall provide the occupants with a panoramic view. The windshield shall consist of three layers; the outer light, the middle safety laminate, and the inner light. The .114" thick outer light layer shall provide superior chip resistance. The middle safety laminate layer shall prevent the windshield glass pieces from detaching in the event of breakage. The inner light shall provide yet another chip resistant layer. The cab windshield shall be bonded to the aluminum windshield frame using a urethane adhesive. A custom frit pattern shall be applied on the outside perimeter of the windshield for a finished automotive appearance.

WINDSHIELD WIPERS

Three electric windshield wipers with a washer, in conformance with FMVSS and SAE requirements, shall be provided. The wiper blades shall be 21.65" long and together shall clear a minimum of 1,783 square inches of the windshield for maximum visibility in inclement weather. The wiper system shall be tested and certified to 2,953,000 cycles.

The windshield washer fluid reservoir shall be located at the front of the vehicle and be accessible through the access hood for simple maintenance.

FAST SERVICE ACCESS FRONT TILT HOOD

A full-width access hood shall be provided for convenient access to engine coolant, steering fluid, wiper fluid, cab lift controls, headlight power modules, and ember separator. The hood shall also provide complete access to the windshield wiper motor and components. The hood shall be contoured to provide a sleek, automotive appearance. The hood shall be constructed of two fiberglass panels bonded together and shall include reinforcing ribs for structural integrity. The hood shall include air cylinders to hold the hood in open and closed positions, and a heavy duty latch

system that shall meet FMVSS 113 (Hood Latch System). The spring-loaded hood latch shall be located at the center of the hood with a double-action release lever located behind the upper grille. The two-step release requires the lever first be pulled to the driver side until the hood releases from the first latch (primary latch) then to the passenger side to fully release the hood (secondary latch).

CAB INTEGRITY CERTIFICATION

The fire apparatus manufacturer shall provide, at the time of bid, a cab integrity certification. Testing shall meet or exceed the requirements below:

- European Occupant Protection Standard ECE Regulation No.29
- SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks
- SAE J2420 COE Frontal Strength Evaluation - Dynamic Loading Heavy Trucks.

There shall be no exception to any portion of the cab integrity certification. Nonconformance shall lead to immediate rejection of bid.

CAB FLOOR

The cab and crew cab floor areas shall be covered with floor mat consisting of a black pyramid rubber facing and closed cell foam de-coupler.

The top surface of the material has a series of raised pyramid shapes evenly spaced, which offer a superior grip surface. Additionally, the material has a .25" thick closed cell foam (no water absorption), which offers a sound dampening material for reducing sound levels.

SHELVING

There shall be four shelves provided in the EMS compartment. Each shelf shall be constructed of 0.090" aluminum with a 1.25" up-turned lip. Shelving shall be infinitely adjustable by means of a threaded tightener sliding in a track.

The location shall be in DS and PS EMS compartments / 2 in each compartment..

DOORS

The forward cab and crew cab doors shall be the half-height style door. To enhance entry and egress to the cab, the forward cab doors shall be a minimum of 43.59" wide x 64.71" high. The crew cab doors shall measure a minimum of 37.87" wide x 73.75" high.

The forward cab and crew cab doors shall be constructed of extruded aluminum with a nominal material thickness of .125". The exterior door skins shall be constructed from .090" aluminum.

Each forward cab and crew cab entry door shall contain a roll-down laminated window. The forward cab door windows shall include a 7.50" high x 10.00" wide drop area at the front to enhance visibility.

A customized, vertical, pull-down type door handle shall be provided on the exterior of each cab door. The exterior handle shall be designed specifically for the fire service to prevent accidental activation, and shall provide 4.00" wide x 2.00" deep hand clearance for ease of use with heavy gloved hands. Each door shall also be provided with an interior flush, open style paddle handle that shall be readily operable from fore and aft positions, and be designed to prevent accidental

activation. The interior handles shall provide 4.00" wide x 1.25" deep hand clearance for ease of use with heavy gloved hands.

The cab doors shall be provided with both interior (rotary knob) and exterior (keyed) locks exceeding FMVSS standards. The locks shall be capable of activating when the doors are open or closed. The doors shall remain locked if locks are activated when the doors are opened, then closed.

A full length, heavy duty, stainless steel, piano-type hinge with a .38" pin and 11 gauge leaf shall be provided on all cab doors. There shall be double automotive-type rubber seals around the perimeter of the door framing and door edges to ensure a weather-tight fit.

The inner cab door panels shall be constructed of contoured, .118" thick low density, roto-molded polyethylene and be removable without requiring the disconnection of door and window mechanisms. The roto-molded door panels shall include ultra-violet protectant in the material composition. Thin vacuum formed panels shall not be acceptable.

The cab steps at each cab door location shall be located below the cab doors and shall be exposed to the exterior of the cab.

CAB DOOR SCUFFPLATES

For enhanced durability, all interior cab door roto-molded polyethylene panels shall be provided with a polished stainless steel scuff-plate insert.

ELECTRIC WINDOW CONTROLS

Each cab entry door shall be equipped with an electrically operated window. A window control panel shall be ergonomically molded into the armrest of the door panel within easy reach of the respective occupant. Each switch shall allow intermittent or auto down operation for ease of use. Auto down operation shall be actuated by holding the window down switch for approximately 1/2 second. The driver control panel shall contain a control switch for each cab door's window. All other door control panels shall contain a single switch to operate the window within that door.

RECESSED POCKET WITH ELASTIC COVER

To provide organized storage (clutter control) in the cab for miscellaneous equipment, the cab interior shall be provided with recessed storage pockets. The pockets shall be 6.50" wide x 2.12" high x 6.00" deep and shall be constructed of rugged, impact resistant, roto-molded low density polyethylene. The pockets shall be provided with a perforated elastic material cover to secure the equipment in the pocket. The pockets shall be installed in all open mounting locations of the overhead console and instrument console.

GRILLE

A bright finished aluminum mesh grille screen, inserted behind a formed bright finished grille surround, shall be provided on the front center of the cab, and serve as an air intake to the radiator.

FENDER CROWNS

Stainless steel fender crowns shall be installed at cab wheel openings.

TRIM BAND (cab face)

A 10.00" band of 22 gauge pattern finish stainless steel trim shall be installed across the front of the cab, from door hinge to door hinge. The trim band shall be centered on the head lights and applied

with two-sided tape. A self adhesive trim strip shall be applied around the perimeter of the trim band.

MOLDING (on sides of cab)
Chrome molding shall be provided on both sides of cab.

CAB LIFT
A hydraulic cab lift system shall be provided, consisting of an electric-powered hydraulic pump, fluid reservoir, dual lift cylinders, remote cab lift controls and all necessary hoses and valves. The hydraulic pump shall have a backup manual override, for use in the event of an electrical failure.

The cab lift controls shall be located at the driver side front of the cab, easily accessible under the full width front access hood. The controls shall include a permanently mounted raise/lower switch. For enhanced visibility during cab tilt operations, a remote control tether with on/off switch shall be supplied on a coiled cord that shall extend from 2' (coiled) to 6' (extended).

The rear of the cab shall be locked down by a two-point, automatic, hydraulic, double hook mechanism that fully engages after the cab has been lowered (self-locking). The dual 2 1/4" diameter hydraulic cylinders shall be equipped with a velocity fuse that protects the cab from accidentally descending when the cab is in the tilt position.

For increased safety, a redundant mechanical stay arm shall be provided that must be manually put in place on the driver side between the chassis and cab frame when cab is in the raised position. This device shall be manually stowed to its original position before the cab can be lowered.

INTERLOCK, CAB LIFT TO PARKING BRAKE
The cab lift safety system shall be interlocked to the parking brake. The cab tilt mechanism shall be active only when the parking brake is set and the ignition switch is in the on position. If the parking brake is released, the cab tilt mechanism shall be disabled.

MIRRORS
For enhanced visibility, and safety, a forward positioned mirror shall be mounted on each side of the front cab roof corner. The mirrors shall be provided with a cross-view mirror mounted on the bottom of each mirror support arm to greatly reduce blind spots, and meet FMVSS-111 visibility bus standards. Both front cab roof corners shall be reinforced with an aluminum casting at the mounting location, providing maximum stability for the mirror arm and head assembly. The mirror arm substructure shall extend forward and outward of the cab, and be constructed out of 4" diameter .25" wall aluminum tubing. For reduced service costs, the mirror shall include a dual break-away design, controlled by a rotational detent mechanism. In the event of an impact, the mirror arm shall break-away to either the inboard or outboard position. The mirror head, and injection molded arm cover, shall offer a sleek aerodynamic styling with overall width of 115.8" (reduces vehicle width by 7.00" when compared to door mount bus style mirrors). The mirror head and arm shall provide a seamless appearance with a chromed finish, and include a black painted metal cover plate on the underside of the arm to reduce glare. For maximum visibility and safety, a flat mirror section shall be provided that measures 83.00 square inches in reflective area. There shall also be an integral convex mirror section that shall measure 27.00 square inches in reflective area. The flat glass and convex section in each mirror shall be adjustable with remote controls that are located within easy reach of the driver.

BUMPER
A one piece, stainless steel bumper shall be attached to the front of the frame.

A 9.00" channel shall be mounted directly behind the bumper for additional strength.

The bumper shall be extended 19.00" from front face of cab.

LIFT AND TOW MOUNTS
Mounted to the frame extension shall be lift and tow mounts. The lift and tow mounts shall be designed and positioned to adapt to certain tow truck lift systems.

The lift and tow mounts with eyes shall be painted the same color as the frame.

HOSE TRAY
A hose tray, constructed of aluminum, shall be placed in the center of the bumper extension.

The tray shall have a capacity of 150' of 1.75" double jacket cotton-polyester hose.

Black rubber grating shall be provided at the bottom of the tray. Drain holes are also provided.

GRAVEL PAN
A gravel pan, constructed of bright aluminum tread-plate, shall be furnished between the bumper and cab face.

The gravel pan shall be properly supported from the underside to prevent flexing and vibration of the aluminum tread-plate.

COVER, HOSE TRAY
A bright aluminum tread-plate cover shall be provided over the one hose tray.

The cover shall be "notched" allowing the hose to be pre-connected to hose connection.

The cover shall be attached with a stainless steel hinge.

A D-ring latch shall secure the cover in the closed position and a pneumatic stay arm on each side shall hold the cover in the open position.

The area of the hose tray to be covered shall be the Centered on top of the bumper and notch to the PS.

TOW HOOKS
No tow hooks are to be provided. This truck shall be equipped with a lift and tow package with integral tow eyes.

CAB INTERIOR

With safety as the primary objective, the wrap-around style, impact resistant, rugged, roto-molded cab instrument panel shall be designed with unobstructed visibility to instrumentation. The dash layout shall provide the driver with a quick reference to gauges that allows more time to focus on the road. The center console shall be an impact resistant, roto-molded low density polyethylene, and shall include an easily removable cover for the defroster. The defroster cover shall include louvers strategically located for optimal air flow and defrost capability to the windshield. The center console shall also provide two recessed pockets to be used for radio chargers, or storage for miscellaneous items. The passenger side dashboard shall be constructed of roto-molded heavy duty polyethylene, with a stylish, automotive appearance. For enhanced versatility, the passenger side roto-molded dash shall include a flat painted aluminum working surface. To provide optional (service friendly) control panels, switches and storage modules, a three piece, 4mm thick polyethylene roto-molded overhead console shall also be provided. To complete the cab front interior design, roto-molded polyethylene modesty panels shall be provided under the dash on both sides of the cab. The driver side modesty panel shall provide mounting for the battery switch and diagnostic connectors, while the passenger side modesty panel provides a lockable glove box, and ground access to the main electrical distribution panel via quick quarter turn fasteners. For durability, rugged roto-molded polyethylene shall be used. Vacuum formed composite shall not be acceptable.

The engine tunnel, side walls and rear wall shall be covered by a leather grain vinyl that is resistant to oil, grease, and mildew.

The contoured inner door liners shall be constructed of an impact resistant, roto-molded heavy duty polyethylene. The inner panels shall include grab handles and control panels molded into the upper section of the door panel. The door panels shall extend 36.5" down from the door window.

The headliner shall be installed in both forward and rear cab sections. The crew cab headliner shall be one piece (NO EXCEPTIONS). The headliner panel shall be a composition of a corrugated high density polyethylene panel covered with a sound barrier and upholstery. For quick, easy access of electrical wiring, or to perform other maintenance needs without stripping screws, the headliner shall be held in place by a dual lock fastening system that shall require no tools for installation or removal. Headliner installation requiring removal of mechanical fasteners shall not be acceptable.

The cab structure shall include designated raceways for electrical harness routing from the front of the cab to the rear upper portion of the cab. Raceways shall be extruded in the forward door frame, floor, walls and overhead in the area where the walls meet the ceiling. The raceways located in the floor shall be covered by aluminum extrusion, while the vertical and overhead raceways shall be covered by a decorative composite panel. The raceways shall improve harness integrity by providing a continuous harness path that eliminates wire chafing and abrasion associated with exposed wiring or routing through drilled metal holes. Harnesses shall be laid in place, not pulled through holes drilled in aluminum tubing. Once laid in place, all harnesses shall be held in position by a hook and loop fastening system. The hook and loop system shall allow for bracket fastener points to not puncture harnesses. The raceways shall include removable covers, providing maintenance personnel with quick and easy access for trouble shooting, or the addition of accessories. Harnesses shall be located within the raceway behind the wire way cover.

CAB INTERIOR UPHOLSTERY

The cab interior upholstery shall be dark gray. All cab interior materials shall meet FMVSS 302 (flammability of interior materials).

INTERIOR PAINT (Cab)
The cab interior metal surfaces shall be painted gray, vinyl texture paint.

GRAB HANDLE+
A black rubber covered grab handle shall be mounted on the door post of the driver side cab door to assist in entering the cab. The grab handle shall be securely mounted to the post area between the door and windshield.

A reinforced grab handle with 14.9" wide hand clearance shall be designed as an integral part of the roto-molded dash panel, and shall be located directly in front of the front passenger seat.

DRIVER SEAT
A cam action seat with air suspension shall be provided in the cab for the driver. To maintain optimal seat position and ride quality for a broader range of occupant sizes, the suspension shall be provided with a height control valve that automatically positions the seat in the center of the suspension travel when the occupant sits down. For increased convenience, the seat shall include electric controls to adjust the rake, height, and horizontal postion. Electric controls shall be located below the forward part of the seat cushion. To provide flexibility for multiple driver configurations, the seat shall be furnished with an adjustable reclining back. The seat back shall be a high back style with manual lumbar adjustment lever, for lower back support, and shall include minimum 7.50" deep side bolster pads for maximum support. For optimal comfort, the seat shall be provided with dual density foam cushions designed with EVC (elastomeric vibration control).

The seat shall include the following features incorporated into the frontal impact protection system.

A suspension seat safety system shall be included. When activated, this system shall pretension the seat belt and retract the seat to its lowest travel position.

The seat shall be furnished with a three-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt shall have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position. The seat belt webbing shall be red in color.

PASSENGER SEAT, FRONT
A cam action seat with air suspension shall be provided in the cab for the passenger. To maintain optimal seat position and ride quality for a broader range of occupant sizes, the suspension shall be provided with a height control valve that automatically positions the seat in the center of the suspension travel when the occupant sits down. For increased convenience, the seat shall include a manual control to adjust the horizontal position. The manual horizontal control shall be a towel-bar style located below the forward part of the seat cushion. For optimal comfort, the seat shall be provided with dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt

receptacle, that shall activate an alarm indicating a seat is occupied but not belted.

The seat back shall be an SCBA back style with 7.5 degree fixed recline angle, and shall include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat shall include the following features incorporated into the frontal impact protection system.

A suspension seat safety system shall be included. When activated, this system shall pretension the seat belt and retract the seat to its lowest travel position.

The seat shall be furnished with a three-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt shall have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position. The seat belt webbing shall be red in color.

REAR FACING PASSENGER SIDE OUTBOARD SEAT

There shall be one rear facing seat provided at the passenger side outboard position in the crew cab. For optimal comfort, the seat shall be provided with dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt receptacle that shall activate an alarm indicating a seat is occupied but not buckled. The seat back shall be an SCBA back style with 7.5 degree fixed recline angle, and shall include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support. The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

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REAR FACING DRIVER SIDE OUTBOARD SEAT

There shall be one rear facing seat provided at the driver side outboard position in the crew cab. For optimal comfort, the seat shall be provided with dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seat shall be equipped with seat belt sensors in the seat cushion and belt receptacle that shall activate an alarm indicating a seat is occupied but not buckled. The seat back shall be an SCBA back style with 7.5 degree fixed recline angle, and shall include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support.

The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seat shall be furnished with a three-point, shoulder type seat belt. To provide quick, easy use for occupants wearing bunker gear, the seat belt shall have a minimum 120.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belt webbing shall be red in color.

EMS COMPARTMENT

An EMS compartment, 21.00" wide x 60.00" high x 14.00" deep with one Gortite roll up door, locking, with white finish shall be provided in the crew cab.

The compartment shall be constructed of smooth aluminum, and painted to match the cab interior.

COMPARTMENT LIGHT

Two Krystal-lite, Model "Super Bright", strip lights shall be provided and mounted vertically along the side of the door framing. The lights shall be held in place with clear strips supplied with the lights. The lights shall be controlled by an automatic door switch.

This storage compartment shall be compliant per NFPA standard for automotive fire apparatus.

EMS COMPARTMENT

An EMS compartment, 21.00" wide x 60.00" high x 14.00" deep with one Gortite roll up door, locking, with white finish shall be provided in the crew cab.

The compartment shall be constructed of smooth aluminum, and painted to match the cab interior.

COMPARTMENT LIGHT

Two strip lights shall be provided and mounted vertically along the side of the door framing. The lights shall be held in place with clear strips supplied with the lights. The lights shall be controlled by an automatic door switch.

This storage compartment shall be compliant per NFPA standard for automotive fire apparatus.

FORWARD FACING CENTER SEATS

There shall be two forward facing seats provided at the center position in the crew cab. For optimal comfort, the seats shall be provided with dual density foam cushions designed with EVC (elastomeric vibration control). To ensure safe operation, the seats shall be equipped with seat belt sensors in the seat cushion and belt receptacle that shall activate an alarm indicating a seat is occupied but not buckled. The seat backs shall be an SCBA back style with 7.5 degree fixed recline angle, and shall include minimum 4.50" wide x 7.50" deep side bolster pads for maximum support.

The SCBA cavity shall be adjustable from front to rear in 1.00" increments, to accommodate different sized SCBA cylinders. Moving the SCBA cavity shall be accomplished by unbolting, relocating, and re-bolting it in the desired location.

The seats shall be furnished with three-point, shoulder type seat belts. To provide quick, easy use for occupants wearing bunker gear, the seat belts shall have a minimum 130.00" shoulder length and 55.00" lap length. The seat belt tongue shall be stored at waist position for quick application by the seat occupant. The seat belt receptacle shall be provided on a cable conveniently nested next to the seat cushion, providing easy accessibility. The seat belts shall be furnished with dual automatic retractors that shall provide ease of operation in the normal seating position. The seat belt webbing shall be red in color.

SEAT UPHOLSTERY

All seat upholstery shall be gray woven with black water resistant material.

SEAT BELTS

All seating positions in cab and crew cab shall have seat belts.

RADIO COMPARTMENT

A compartment for the radio amplifier shall be located on the floor of the cab behind the front passenger seat. A lift-up door with a chrome plated lift and turn latch shall be provided for access. The compartment shall be constructed of smooth aluminum and painted to match the cab interior. The radio control shall be located in the overhead console on the passenger side.

AIR BOTTLE HOLDERS

All SCBA type seats in the cab shall have a "Hands-Free" auto clamp style bracket in its backrest. For efficiency and convenience, the bracket shall include an automatic spring clamp that allows the occupant to store the SCBA bottle by simply pushing it into the seat back. For protection of all occupants in the cab, in the event of an accident, the inertial components within the clamp shall constrain the SCBA bottle in the seat for up to a 30G force (dynamic sled test), and shall exceed the NFPA standard of 9G by more than three times. Bracket designs with manual restraints (belts, straps, buckles) that could be inadvertently left unlocked and allow the SCBA to move freely within the cab during an accident, shall not be acceptable.

There shall be a quantity of five SCBA brackets.

The brackets shall be sized to fit MSA Firehawk, 30 Minute - 2216 PSI, 6.80" Diameter, Carbon, L-30.

SHOULDER HARNESS HEIGHT ADJUSTMENT

All seating positions furnished with three point shoulder type seat belts, shall include a height adjustment. This adjustment shall optimize the belts effectiveness and comfort for the seated firefighter.

A total of four seating positions shall have the adjustable shoulder harness.

INDICATOR LIGHT

The seat belt not fastened light and alarm shall be designed so a seat must be occupied and the respective seat belt is not buckled to activate the alerts.

A red indicator light located on the cab gauge panel shall be furnished. The indicator light and alarm shall operate as follows if an occupant is not buckled:

Parking brake engaged:

- The indicator light shall be active (steady)
- The audible alarm shall be inactive.

Ignition switch on and the parking brake disengaged:

- The indicator light shall operate as follows:
- Flash for the first 30 seconds
- Remain active (not flashing) for the next 60 seconds
- Continue by flashing quickly for 5 seconds at every 30-second interval until all occupants seat belts are buckled.

An audible alarm shall chime quickly whenever the indicator light flashes quickly.

The alarm shall repeat this process until all occupants are buckled.

The indicator light and alarm shall deactivate when all occupants seat belts are buckled.

All folding and non-folding seats in the cab shall contain the seat belt not buckled feature.

FRONTAL IMPACT PROTECTION

The cab shall be equipped with a frontal impact protection system consisting of one air bag in front of the driver, one knee bolster air bag in front of the forward passenger seating position, and S4 for suspension seats or belt pretensioner for fixed seats in the driver and forward passenger positions. The air bags shall be designed specifically for the cab configurations they are used in.

The cab and chassis design shall have been subjected, via third party test facility, to a 21 MPH crash impact during frontal and oblique impact testing. Testing shall include all major chassis and cab components such as mounting straps for fuel and air tanks, suspension mounts, front suspension components, rear suspension components, frame rail cross members, engine and transmission and their mounts, pump house and mounts, frame extensions and body mounts. The testing shall provide configuration specific information used to optimize the timing for firing the air bags. (**NO EXCEPTIONS**)

The driver side air bag shall be mounted in the steering wheel and shall be designed to protect the head and upper torso of the occupant, when used in combination with the 3 point seat belt, in the event of a frontal or oblique impact. The passenger side knee bolster air bag shall be mounted in the modesty panel below the dash panel and shall be designed to protect the legs of the occupant, when used in combination with the 3-point seat belt, in the event of a frontal

or oblique impact.

In the event of a frontal or oblique impact, the system shall deploy the front driver and passenger side air bags, and activate the following components integrated into the driver and front passenger cab seats:

- Suspension seats shall be retracted to lowest travel position.
- Seat belts shall be pretensioned to firmly hold the occupants in place.

CAB WARRANTY

The bidder shall furnish a **ten year** cab warranty. The warranty shall cover defects in design or workmanship in the cab tubular support and mounting supports and other cab structural components identified in the specifications. A copy of the warranty shall be submitted with the bid**. (NO EXCEPTIONS)**

ENGINE COMPARTMENT LIGHT

An engine compartment light shall be installed under the engine hood, of which the switch is an integral part. Light shall have a .125" diameter deep hole in its lens to prevent moisture retention.

CAB DOME LIGHTS

There shall be two incandescent dome lights installed in the cab providing an overall lower cost of ownership. The lights shall be mounted above the inside shoulder of the driver and officer. The forward clear light shall be controlled by the door switch and the lens switch. The rear red light shall be controlled by the lens switch only.

In addition, there shall be two adjustable map lights with an integral switch recessed into the cab ceiling. One light shall be located above the driver's seat and one light shall be located above the officer's seat.

CREW CAB DOME LIGHTS

There shall be two incandescent dome lights installed in the crew cab. The forward clear light shall be controlled by the door switch and the lens switch. The rear red light shall be controlled by the lens switch only.

STEP LIGHTS

For reduced overall maintenance costs compared to incandescent lighting, there shall be four LED step lights provided. The lights shall be installed at each cab and crew cab door, one per step, in the driver side front doorstep, driver side crew cab doorstep, passenger side front doorstep and passenger side crew cab doorstep.

The lights shall be activated when the adjacent door is opened.

CAB DEFROSTER

To provide maximum defrost and heating performance, a 54,961-BTU heater-defroster unit with 558 SCFM of air flow shall be provided inside the cab. The defroster unit shall be strategically located under the center forward portion of the roto-molded instrument panel. For easy access, a removable roto-molded cover shall be installed over the defroster unit. The defroster shall include an integral

aluminum frame air filter, high performance dual scroll blowers, and ducts designed to provide maximum defrosting capabilities for the one piece windshield. The defroster ventilation shall be built into the design of the cab dash instrument panel and shall be easily removable for maintenance. The defroster shall be capable of clearing 98% of the windshield and side glass when tested under conditions where the cab has been cold soaked at 0 degrees F for 10 hours, and a 2 ounce per square inch layer of frost/ice has been able to build up on the exterior windshield. The defroster system shall meet or exceed SAE J382 (minimum defrosting system performance requirements)

CAB/CREW CAB HEATER

Two 36,702-BTU auxiliary heaters with 276 SCFM (each unit) of air flow shall be provided inside the crew cab, one in each outboard rear-facing seat riser. The heaters shall include high performance dual scroll blowers (one for each unit). Outlets for the heaters shall be located below each rear-facing seat riser and below the fronts of the driver and passenger seats, for efficient airflow. An extruded aluminum plenum shall be incorporated in the cab structure that shall transfer heat to the forward cab seating positions.

The heater-defroster and crew cab heaters shall be controlled by a single integral electronic control panel. The heater control panel shall allow the driver to control heat flow to the front and rear simultaneously. The control panel shall include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of the driver. The control panel shall include highly visible, progressive LED indicators for both fan speed and temperature. For increased convenience, an optional dual control for the passenger position shall also be available.

AIR CONDITIONING

A high-performance, customized air conditioning system shall be furnished inside the cab and crew cab. A 19 cubic inch compressor shall be installed on the engine.

A roof-mounted condenser with a 63,000 BTU output that meets and exceeds the performance specification shall be installed on the cab roof. Mounting the condenser below the cab or body would reduce the performance of the system and shall not be acceptable.

One evaporator unit shall be installed in the cab, located in the center of the cab ceiling over the engine tunnel. The evaporator shall include two high performance cores and plenums with multiple outlets, one plenum directed to the front and one plenum directed to the rear of the cab.

The evaporator unit shall have a 49,000 BTU rating that meets and exceeds the performance specifications. Adjustable air outlets shall be strategically located on the evaporator cover per the following:

- Two shall be directed towards the drivers location.
- Two shall be directed towards the officers location.
- Six shall be directed towards crew cab area.

The air conditioner refrigerant shall be R-134A and shall be installed by a certified technician.

The air conditioner shall be controlled by a single integral electronic control panel for the heater, defroster and air conditioner. For ease of operation, the control panel shall include variable adjustment for temperature and fan control, and be conveniently located on the dash in clear view of

the driver. The control panel shall include highly visible, progressive LED indicators for both fan speed and temperature. For added convenience, an optional dual control for the passenger position shall also be available.

INTERIOR CAB INSULATION

The cab walls, ceiling and engine tunnel shall be insulated in all strategic locations to maximize acoustic absorption and thermal insulation. Headliners shall be constructed from a .20" high density polyethylene corrugated material. Each headliner shall be wrapped with a 0.25" thick foil faced poly damp low emissivity foam insulation barrier for acoustic and thermal control. For ease of installation and removal, all headliners shall be held in place by a dual lock fastening system. Headliner installation requiring removal of mechanical fasteners shall not be acceptable.

CAB INSTRUMENTATION

The cab instrument panel shall consist of gauges, an LCD display, telltale indicator lights, audible warning and control switches. The function of instrument panel controls and switches shall be identified by a label adjacent to each item. Actuation of the headlight switch shall illuminate the label wording for after dark operation. Telltale indicator lamps shall not be illuminated unless necessary. The cab instruments and controls shall be conveniently located within the forward cab section directly forward of the driver. Gauges and emergency vehicle switches shall be installed on removable panels for ease of service and low cost of ownership.

GAUGES

The gauge panel shall include the following nine gauges to monitor vehicle performance:

- Voltmeter gauge
- Tachometer
- Speedometer
- Fuel level gauge
- Engine oil pressure gauge
- Front air pressure gauge
- Rear air pressure gauge
- Transmission oil temperature gauge
- Engine coolant temperature gauge.

All gauges shall perform prove out at initial power-up to ensure proper performance.

INDICATOR LAMPS

To promote safety, the following telltale indicator lamps shall be located on the instrument panel in clear view of the driver. The indicator lamps shall be "dead-front" design that is only visible when active. The colored indicator lights shall have descriptive text or symbols. The following amber telltale lamps shall be present:

- Low coolant
- Traction control (where applicable)
- Check engine
- Check transmission
- Auxiliary brake overheat

- Air restriction
- Caution (triangle symbol)
- Water in fuel
- DPF (engine diesel particulate filter regeneration)
- Trailer ABS (where applicable)
- Wait to start (where applicable)
- HET (engine high exhaust temperature) (where applicable)
- Antilock Brake System
- MIL (engine emissions system malfunction indicator lamp) (where applicable)
- Side roll fault (where applicable)

The following red telltale lamps shall be present:

- Warning (stop sign symbol)
- Seat belt
- Parking brake
- Stop engine
- Rack down

The following green telltale lamps shall be provided:

- Left turn
- Right turn
- Battery on

The following blue telltale lamp shall be provided:

- High beam

Indicator lamps shall perform prove out at initial power-up to ensure proper performance.

CONTROL SWITCHES

For ease of use, the following controls shall be provided immediately adjacent to the cab instrument panel within easy reach of the driver.

Ignition switch: For ease of use in low light conditions, the switch shall contain a red indicator light which shall activate when the battery switch is on and a green indicator light which shall activate whenever the ignition switch is on.

Momentary engine start switch: For ease of use in low light conditions, an integral red indicator light shall activate with the battery switch.

Heater and defroster controls

Headlight / Parking light switch: A 3-position switch shall be provided. The first switch position shall deactivate all parking lights and the headlights. The second switch position shall activate the parking lights. The third switch position shall activate the headlights.

Turn signal arm:

- Self canceling turn signal
- Wiper controls:
  Wash function
- Hi/Low/Intermittent (4 speeds)

Hazard switch shall be incorporated into the steering column.

Parking brake control

Chassis horn control shall be provided in the center of the steering wheel

Audible steady tone warning alarm

Audible pulsing tone caution alarm: Any active audible alarms shall be silenced by holding the ignition switch at the top position for 3-5 seconds. For improved safety, silenced audible alarms shall intermittently chirp every 30 seconds until the alarm conditions no longer exist. The intermittent chirp shall act as a reminder to the operator that a caution or warning condition still exists. For added convenience, any new warning or caution conditions shall enable again the steady or pulsing tones respectively.

DIAGNOSTIC PANEL

A diagnostic panel shall be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches shall allow engine and ABS systems to provide blink codes should a problem exist. The diagnostic panel shall include the following:

- Engine diagnostic port
- Transmission and ABS diagnostic port
- Roll sensor diagnostic port
- Solid-state electronics USB diagnostic port
- Engine diagnostic switch (blink codes)
- ABS diagnostic switch (blink codes).

CAB LCD DISPLAY

An integral digital 4 row by 20 character dot matrix display shall be incorporated into the gauge panel. The display shall be capable of showing simple graphical images as well as text. The display shall be split into 3 sections. For ease of use each quadrant shall have a dedicated function. Section one shall provide informational messages such as the odometer. Section two shall display user friendly caution and warning text messages. The text messages shall automatically activate anytime an audible caution or warning tone exists to provide information to the operator of the caution or warning condition. The LCD shall be capable of displaying multiple text messages should more than one caution or warning condition exist. Section three shall indicate additional information such as outside temperature.

SWITCHES

The design of cab instrumentation shall allow for emergency lighting and other switches to be placed within easy reach of the operator thus improving safety. There shall be positions for up to four switch panels in the overhead console on the driver's side, up to four switch panels in the engine tunnel console facing the driver, up to four switch panels in the overhead console on the officer's side and up to two switch panels in the engine tunnel console facing the officer.

High Air Restriction Warning Indicator Light: LCD message with amber warning indicator and audible alarm.

WIPER CONTROL

For simple operation and easy reach, the windshield wiper control shall be an integral part of the directional light lever located on the steering column. The wiper control shall include high and low wiper speed settings, a five speed intermittent wiper control and windshield washer switch. The control shall have a "return to park" provision, which allows the wipers to re-turn to the stored position when the wipers are not in use.

INSTRUMENT CONSOLE WITH WORKING SURFACE

The center console shall include an impact resistant, roto-molded, low density polyethylene extension. The console extension shall contain one large integral mounting location and two smaller integral mounting locations for recessing optional accessories on each side of the console with easy accessibility for both driver and passenger. Mounting locations not used for accessories shall be covered with plates.

To reduce clutter in the cab, two vertically recessed areas shall be provided integral to the top of the console for storage of handheld radios and/or miscellaneous equipment. For convenience, the console extension shall provide a large flat work surface adjacent to the passenger.

CONSOLE EXTENSION WITH COMPARTMENT

The center console shall include an impact resistant, rugged, roto-molded, low density polyethylene accessory module designed to store miscellaneous equipment in the cab. To provide a clean and organized cab interior, a large storage compartment shall be accessible to all occupants in the cab, for storing personnel equipment. For added security, the compartment shall include a hinged cover with two keyed latches.

SWIVEL MOUNT

There shall be two heavy duty swivel mount bracket/s provided for the fire department's equipment. The swivel mount bracket/s shall be located centered between driver and officer.

RADIO ANTENNA MOUNT

An antenna mounting base, Model MATM with 17 feet of coax cable and weatherproof cap shall be provided for a two way radio.

The mount shall be located on the cab roof just to the rear of the officer seat.

The cable shall be routed to the officer side seat box with enough cable for customer to route to the

instrument panel if needed.

SWITCH PANELS

The emergency light switch panel shall have a master switch for ease of use plus individual switches for selective control. Each switch panel shall contain eight membrane-type switches each rated for one million cycles. Documentation shall be provided by the manufacturer indicating the rated cycle life of the switches. The switch panel(s) shall be located on the driver's side overhead to allow for easy access. For ease of use, an additional emergency light master switch shall be located to the left of the steering column below the gauge panel and work in conjunction with all other emergency master switches.

The switches shall be membrane-type and also act as an integral indicator light. For quick, visual indication the entire surface of the switch shall be illuminated white whenever backlighting is activated and illuminated red whenever the switch is active. For ease of use, a 2-ply, scratch resistant laser engraved label indicating the use of each switch shall be placed in the center of the switch. The label shall allow light to pass through the letters for ease of use in low light conditions.

ELECTRICAL POWER CONTROL SYSTEM

The primary power distribution shall be located forward of the officer's seating position and be easily accessible while standing on the ground for simplified maintenance and troubleshooting. Additional electrical distribution centers shall be provided throughout the vehicle to house the vehicle's electrical power, circuit protection, and control components. The electrical distribution centers shall be located strategically throughout the vehicle to minimize wire length. For ease of maintenance, all electrical distribution centers shall be easily accessible. All distribution centers containing fuses, circuit breakers and/or relays shall be accessible without the need for additional tools.

Distribution centers located thought the vehicle shall contain battery powered studs for surrounding and customer installed equipment thus providing a lower cost of ownership.

Circuit protection devices, which conform to SAE standards, shall be utilized to protect electrical circuits. All circuit protection devices shall be rated per NFPA requirements to prevent wire and component damage when subjected to extreme current overload. General protection circuit breakers shall be Type-I automatic reset (continuously resetting). When required, automotive type fuses shall be utilized to protect electronic equipment. Control relays and solenoid shall have a direct current rating of 125% of the maximum current for which the circuit is protected per NFPA.

SOLID-STATE CONTROL SYSTEM

A solid-state electronics based control system shall be utilized to achieve advanced operation and control of the vehicle components. A fully computerized vehicle network shall consist of electronic modules located near their point of use to reduce harness lengths and improve reliability. The control system shall comply with SAE J1939-11 recommended practices.

The control system shall operate as a master-slave system whereas the main control module instructs all other system components. The system shall contain patented Mission Critical software that maintains critical vehicle operations in the unlikely event of a main controller error. The system shall utilize a Real Time Operating System (RTOS) providing a lower cost of ownership.

For increased reliability and simplified use the control system modules shall include the following attributes:

- Green LED indicator light for module power
- Red LED indicator light for network communication stability status
- Control system self test at activation and continually throughout vehicle operation
- No moving parts due to transistor logic
- Software logic control for NFPA mandated safety interlocks and indicators
- Integrated electrical system load management without additional components
- Integrated electrical load sequencing system without additional components
- Customized control software to this vehicle's configuration
- Factory and field reprogrammable to accommodate changes to the vehicles operating parameters
- Complete operating and troubleshooting manuals
- USB connection to the main control module for advanced troubleshooting.

To assure long life and operation in a broad range of environmental conditions, the control system modules shall meet the following specifications:

- Module circuit board shall meet SAE J771 specifications.
- Operating temperature from -40C to +70C
- Storage temperature from -40C to +70C
- Vibration to 50g
- IP67 rated enclosure (Totally protected against dust and also protected against the effect of temporary immersion between 15 centimeters and 1 meter)
- Operating voltage from 8 volts to 16 volts DC.

The main controller shall activate status indicators and audible alarms designed to provide warning of problems before they become critical.

CIRCUIT PROTECTION AND CONTROL DIAGRAM

Copies of all job-specific, computer network input and output (I/O) connection shall be provided with each chassis. The Sheets shall indicate the function of each module connection point, circuit protection information (where applicable), wire numbers, wire colors and load management information.

ON-BOARD ELECTRICAL SYSTEM DIAGNOSTICS

Advanced on-board diagnostic messages shall be provided to support rapid troubleshooting of the electrical power and control system. The diagnostic messages shall be displayed on the information center located at the driver's position.

The on-board information center shall include the following diagnostic information:

- Text description of active warning or caution alarms
- Simplified warning indicators
    - Amber caution light with intermittent alarm
    - Red warning light with steady tone alarm

ADVANCED DIAGNOSTICS

An advanced, diagnostic software program shall be provided for this control system. The soft-ware shall provide troubleshooting tools to service technicians equipped with a computer.

The service and maintenance software shall be easy to understand and use, have the ability to view system input/output (I/O) information, and include a USB cable for connection from a computer to the vehicle.

INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM

A system shall be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

VOLTAGE MONITOR SYSTEM

A voltage monitoring system shall be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system shall provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm shall activate if the system falls below 11.8 volts DC for more than two minutes.

DEDICATED RADIO EQUIPMENT CONNECTION POINTS

There shall be four studs provided in the primary power distribution center located in front of the officer for two-way radio equipment.

The studs shall consist of the following:

- 12-volt 40-amp battery switched power
- 12-volt 100-amp ground
- 12-volt 60-amp ignition switched power
- 12-volt 60-amp direct battery power.

ENHANCED SOFTWARE

The solid-state control system shall include the following software enhancements:

- All perimeter lights and scene lights (where applicable) shall be deactivated when the parking brake is released
- Cab and crew cab dome lights shall remain on for 10 seconds for improved visibility after the doors close. The dome lights shall dim after 10 seconds or immediately if the vehicle is put into gear.
- Cab and crew cab perimeter lights shall remain on for 10 seconds for improved visibility after the doors close. The dome lights shall dim after 10 seconds or immediately if the vehicle is put into gear.

EMI/RFI PROTECTION

To prevent erroneous signals from crosstalk contamination and interference, the electrical system shall meet, at a minimum, SAE J551/2, thus reducing undesired electromagnetic and radio frequency emissions. An advanced electrical system shall be used to insure radiated and conducted electromagnetic interference (EMI) or radio frequency interference (RFI) emissions are suppressed at their source.

The apparatus shall have the ability to operate in the electromagnetic environment typically found in

fire ground operations to ensure clean operations. The electrical system shall meet, without exceptions, electromagnetic susceptibility conforming to SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter. The vehicle OEM, upon request, shall provide EMC testing reports from testing conducted on an entire apparatus and shall certify that the vehicle meets SAE J551/2 and SAE J1113/25 Region 1, Class C EMR for 10Khz-1GHz to 100 Volts/Meter requirements. Component and partial (incomplete) vehicle testing is not adequate as overall vehicle design can impact test results and thus is not acceptable by itself.

EMI/RFI susceptibility shall be controlled by applying appropriate circuit designs and shielding. The electrical system shall be designed for full compatibility with low-level control signals and high-powered two-way radio communication systems. Harness and cable routing shall be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

INFORMATION CENTER

A LCD display integral to the cab gauge panel shall be included as outlined in the cab instrumentation area.

BATTERY SYSTEM

Four 12 volt batteries that include the following features shall be provided:

- 950 CCA, cold cranking amps
- 190 amp reserve capacity
- High cycle
- Group 31
- Rating of 3800 CCA at 0 degrees Fahrenheit
- 760 minutes of reserve capacity
- Threaded stainless steel studs.

Each battery case shall be a black polypropylene material with a vertically ribbed container for increased vibration resistance. The cover shall be manifold vented with a central venting location to allow a 45 degree tilt capacity.

The inside of each battery shall consist of a "maintenance free" grid construction with poly wrapped separators and a flooded epoxy bottom anchoring for maximum vibration resistance.

A single starting system shall be provided.

An ignition switch and starter button shall be located on the instrument panel.

MASTER BATTERY SWITCH

A master battery switch, to activate the battery system, shall be provided inside the cab within easy reach of the driver.

An indicator light shall be provided on the instrument panel to notify the driver of the status of the battery system.

BATTERY COMPARTMENTS

The batteries shall be stored in well-ventilated compartments that are located under the cab and bolted directly to the chassis frame. The battery compartments shall be constructed of 10 gauge steel, and be designed to accommodate a maximum of three group 31 batteries in each compartment. The compartments shall include formed fit heavy duty roto-molded polyethylene battery tray inserts on each side of the frame rails. The batteries shall be mounted inside of the roto-molded trays.

JUMPER STUDS

One set of battery jumper studs with plastic color coded covers shall be installed on the battery box on the driver's side. This shall allow enough room for easy jumper cable access. A tag shall be provided for positive/negative terminals.

BATTERY CHARGER

A Dual bank battery charger shall be provided.

These chargers are totally waterproof and shut off completely after charge. No trickle charge. Return to charge maintenance mode. They are temperature compensated to assure you fully charged batteries under all atmospheric conditions. No installation restrictions.

This charging system shall include the single bank Remote Indicator located on the driver's side of the cab.

The battery charger shall be wired to the 120-volt shoreline to activate automatically when power is connected.

Battery charger shall be located in the pump plumbing area, below the cargo area floor.

ALTERNATOR

An alternator shall be provided. It shall have a rated output current of 340 amp as measured by SAE method J56. Also, it shall have a custom three set point voltage regulator. The alternator shall be connected to the power and ground distribution system with heavy-duty cables sized to carry the full rated alternator output.

THIRD SPARE CIRCUIT

There shall be two pairs of wires installed.

The above wires shall have the following features:

- Wires shall be connected directly to the battery power
- Wires are protected to 15 amps
- Power and ground will end
- Termination is with heat shrinkable butt splicing
- Wires shall be sized to 125% of the protection.

SPARE CIRCUIT

There shall be one pair of wires installed.

The above wires shall have the following features:

- Wires shall be connected directly to the battery power

- Wires shall be protected to 20 amps
- Power and ground shall end
- Termination shall with six position terminal strip.
- Wires shall be sized to 125% of the protection.

SECOND SPARE CIRCUIT

There shall be four pairs of wires installed.

The above wires shall have the following features:

- Wires shall be connected directly to the battery power
- Wires are protected to 15 amps
- Power and ground will end
- Termination is with heat shrinkable butt splicing.
- Wires shall be sized to 125% of the protection.

ELECTRONIC LOAD MANAGER

An electronic load management (ELM) system shall be provided that monitors the vehicles 12-volt electrical system, automatically reducing the electrical load in the event of a low voltage condition, and automatically restoring the shed electrical loads when a low voltage condition expires. This ensures the integrity of the electrical system.

For improved reliability and ease of use, the load manager system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load management tasks. Load management systems which require additional components shall not be allowed.

The system shall include the following features:

- System voltage monitoring.
- A shed load shall remain inactive for a minimum of five minutes to prevent the load from cycling on and off.
- Sixteen available electronic load shedding levels.
- Priority levels can be set for individual outputs.
- High Idle will activate before any electric loads are shed and deactivate with the service brake.
    - If enabled:
    - “Load Man Hi-Idle On” shall display on the information center.
    - Hi-Idle shall not activate until 30 seconds after engine start up.
- Individual switch "on" indicator to flash when the particular load has been shed.
- The information center indicates system voltage.

The information center includes a "Load Manager" screen indicating the following:

- Load managed items list, with priority levels and item condition.
- Individual load managed item condition:
    - ON = not shed
    - SHED = shed

SEQUENCER

A sequencer shall be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation shall allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

For improved reliability and ease of use, the load sequencing system shall be an integral part of the vehicle's solid state control system requiring no additional components to perform load sequencing tasks. Load sequencing systems which require additional components shall not be allowed.

Emergency light sequencing shall operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights shall be activated one by one at half second intervals. Sequenced emergency light switch indicators shall flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer shall deactivate the warning light loads in the reverse order.

Sequencing of the following items shall also occur, in conjunction with the ignition switch, at half second intervals:

- Cab Heater and Air Conditioning
- Crew Cab Heater (if applicable)
- Crew Cab Air Conditioning (if applicable)
- Exhaust Fans (if applicable)
- Third Evaporator (if applicable)

AMP DRAW REPORT

The bidder shall provide, at the time of bid and delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

The manufacturer of the apparatus shall provide the following:

1) Documentation of the electrical system performance tests.

2) A written load analysis, which shall include the following:
   A) The nameplate rating of the alternator.

   B) The alternator rating under the conditions specified per:
      Applicable NFPA 1901 or 1906 (Current Edition).

   C) The minimum continuous load of each component that is specified per:
      Applicable NFPA 1901 or 1906 (Current Edition).

   D) Additional loads that, when added to the minimum continuous load, determine the total connected load.

   E) Each individual intermittent load.

All of the above listed items shall be provided by the bidder per the applicable NFPA 1901 or 1906 (Current Edition).

EXTERIOR LIGHTING

Exterior lighting shall comply with Federal Department of Transportation, Federal Motor Vehicle Safety Standards and National Fire Protection Association requirements in effect at time of proposal.

Front headlights shall be rectangular shaped, quad style halogen lights mounted in the front trim housing. Headlights shall consist of two lights mounted in the front trim on each side of the cab grill. The outside light on each side shall contain a low and high beam. The inside light on each side shall contain of a high beam light only.

The following LED lighting package shall provide long life lights for a lower cost of ownership:

- One LED combination directional/marker light shall be located in the outside corners of the headlamp trim housing on each side.

- Three LED clearance lamps shall be installed in the center of the cab on the trim above the windshield.

- Four LED identification lamp shall be installed, one each side, facing forward and one each side, facing the side on the trim above the windshield.

WARNING LIGHTS (Cab Face)

Two pairs of Whelen model 60*02F*R LED lights shall be installed on the cab face, above the headlights in a two light bezel.

The outer LEDs shall be required for NFPA and shall meet or exceed the NFPA required light output for the front lower zone. The color of these LEDs shall be red Super LED/clear lens.

The inner LEDs shall be additional lighting. The color of these lights shall be red Super LED/red lens.

Both sets of lights shall be activated by the same switch in the cab.

BACK-UP ALARM

A solid state electronic audible back-up alarm that actuates when the truck is shifted into reverse shall be provided. The device shall sound at 60 pulses per minute and automatically adjust its volume to maintain a minimum five dBa above surrounding environmental noise levels.

MANUAL, FIRE APPARATUS PARTS

Two custom parts manuals for the complete fire apparatus shall be provided in hard copy with the completed unit.

SERVICE PARTS INTERNET SITE

The service parts information included in this manual is also available on the Internet.

MANUALS, CHASSIS SERVICE
Two chassis service manuals containing parts and service information on major components shall be provided with the completed unit.

MANUALS, CHASSIS OPERATION
Two chassis operation manuals shall be provided.

ELECTRICAL WIRING DIAGRAMS
Two electrical wiring diagrams, prepared for the model of chassis and body, shall be provided.

WATER TANK
Booster tank shall have a capacity of 1000 gallons and be constructed of UV stabilized ultra high impact polypropylene plastic by a manufacturer with a minimum of 10 years experience building tanks, is ISO 9001:2000 certified in all its manufacturing facilities, and has over 50,000 tanks in service.

The booster tank shall a form-fitting design that serves to keep the tank height as low as possible. The tank shall be no wider than 39" at the base to allow for greater compartment depth and no wider than 53" at the top.

Tank joints and seams shall be nitrogen welded inside and out.

Tank shall be baffled in accordance with NFPA Bulletin 1901 requirements.

Baffles shall have vent openings at both the top and bottom to permit movement of air and water between compartments.

Longitudinal partitions shall be constructed of .38" polypropylene plastic and shall extend from the bottom of the tank through the top cover to allow for positive welding.

Transverse partitions shall extend from 4.00" off the bottom of the tank to the underside of the top cover.

All partitions shall interlock and shall be welded to the tank bottom and sides.

Tank top shall be constructed of .50" polypropylene. It shall be recessed .38" and shall be welded to the tank sides and the longitudinal partitions.

Tank top shall be sufficiently supported to keep it rigid during fast filling conditions.

Construction shall include 2.00" polypropylene dowels spaced no more than 30.00" apart and welded to the transverse partitions. Two of the dowels shall be drilled and tapped (.50" diameter, 13.00" deep) to accommodate lifting eyes.

A sump that is 8.00" long x 8.00" wide x 6.00" deep shall be provided at the bottom of the water tank.

Sump shall include a drain plug and the tank outlet.

Tank shall be installed in a fabricated cradle assembly constructed of structural steel.

Sufficient cross-members shall be provided to properly support bottom of tank. Cross-members shall be constructed of steel flat bar or rectangular tubing.

Tank shall "float" in cradle to avoid torsional stress caused by chassis frame flexing. Rubber cushions, .50" thick x 3.00" wide, shall be placed on all horizontal surfaces that the tank rests on.

Stops or other provision shall be provided to prevent an empty tank from bouncing excessively while moving vehicle.

Mounting system shall be approved by the tank manufacturer.

Fill tower shall be constructed of .50" polypropylene and shall be a minimum of 8.00" wide x 14.00" long.

Fill tower shall be furnished with a .25" thick polypropylene screen and a hinged cover.

An overflow pipe, constructed of 4.00" schedule 40 polypropylene, shall be installed approximately halfway down the fill tower and extend through the water tank and exit to the rear of the rear axle.

WATER TANK WARRANTY

The tank shall have a **lifetime** warranty.

If the tank manufacturer determines that the tank problem has rendered the truck out-of-service, the tank manufacturer shall dispatch a service technician WITHIN 48 HOURS (2 DAYS) to repair the tank (This time period is for the United States and Canada only).

BODY HEIGHT

The height of the body shall be 98.00" from the bottom of the body to the top of the body.

HOSE BED

The hose body shall be fabricated of .125"-5052 aluminum with a 38,000 psi tensile strength.

Flooring of the hose bed shall be removable aluminum grating with the top surface corrugated to aid in hose aeration. The grating slats shall be a minimum of .50" x 4.50" with spacing between slats for hose ventilation.

Hose bed shall accommodate 1000' of 5"400' of 3"400' of 1.75".

Three adjustable hosebed dividers shall be furnished for separating hose.

Each divider shall be constructed of a .125" brushed aluminum sheet fitted and fastened into a slotted, 1.50" diameter radiused extrusion along the top, bottom and rear edge.

Partition shall be fully adjustable by sliding in tracks, located at the front and rear of the hose bed.

Divider shall be held in place by tightening bolts, at each end.

Acorn nuts shall be installed on all bolts in the hose bed, which have exposed threads.

HOSE RESTRAINT

The hose in the hose bed shall be restrained by black nylon velcro straps at the top of the hose bed and a black nylon web strap netting at the top and rear of the hose bed. The netting shall include quick release fasteners.

CUTOUT, HANDHOLD

A cutout with raduised corners shall be provided at the rear of the three hose bed divider(s).

RUNNING BOARDS

Design of the vehicle shall be such that running boards will not be required to reach pre connects or other items on the side of the vehicle.

TAILBOARD

The tailboard shall be designed, as an aluminum tread plate covered space saving work platform shall be provided at the rear of the body. The platform shall fold up to reduce overall truck length, angle of departure, and create a clean safe working platform by keeping rain, snow, and ice off the platform during transit.

The platform shall be 35.50" wide x 21.00" deep. When folded the platform shall be the lower section of the rear compartment door. When deployed the platform shall provide a stepping surface with a rated capacity of 500 pounds.

A handrail shall be provided on each side of the rear compartment for safe access to the platform.

TOW BAR

A tow bar shall be installed under the tailboard at center of truck.

Tow bar shall be fabricated of 1.00" CRS bar rolled into a 3.00" radius.

Tow bar assembly shall be constructed of .38" structural angle. When force is applied to the bar, it shall be transmitted to the frame rail.

Tow bar assembly shall be designed and positioned to allow up to a 30-degree upward angled pull of 17,000 pounds, or a 20,000-pound straight horizontal pull in line with the centerline of the vehicle.

Tow bar design shall have been fully tested and evaluated using strain gauge testing and finite element analysis techniques.

TAILBOARD EXTENSION

An 8.00" bolt-on tailboard extension shall be provided at the rear of the truck, one each side of the drop down tailboard. The tailboard extensions shall be covered with non-slip bright aluminum tread-plate.

COMPARTMENTALIZATION

Body and compartments shall be formed sheet metal fabricated of .125", 5052-H32 aluminum with a tensile strength range of 31,000 to 38,000 psi. Body will be of welded construction to ensure greatest longevity with no visible welds in compartment interior.

Welded construction will consist of 1.00" x .38" engineered plug weld holes that control the size, location, and the amount of weld required. The bodies will be assembled and welded from engineered prints that call out the size, location, and type of weld required. These prints will be available upon request.

Side compartments will be an integral assembly with the rear fenders.

Circular fender liners will be provided. For prevention of paint chips and ease of suspension maintenance the fender liners will be formed from brush finished 304L stainless steel, be unpainted, and removable for suspension maintenance. (NO EXCEPTIONS)

Compartment flooring will be of the sweep out design with the floor 1.00" higher than the compartment door lip.

Drip protection will be provided above the doors by means of aluminum extrusion, or formed bright aluminum tread-plate.

The top of the compartment will be covered with bright aluminum tread-plate rolled over the edges on the front, and rear. These covers will have the corners “TIG” welded.

Top side compartment covers will not be used to form the compartment ceilings, but rather they will be a separate component.

All screws and bolts, which are not Grade 8, will be stainless steel and where they protrude into a compartment will have acorn nuts on the ends to prevent injury.

UNDERBODY SUPPORT SYSTEM

Due to the severe loading requirements of this pumper, a method of body and compartment support suitable for the intended load will be provided.

The backbone of the body support system will begin with the chassis frame rails which is the strongest component of the chassis and is designed for sustaining maximum loads. The support

system will include lateral frame rail extensions that are formed from .375" 80k high strength steel and bolted to the chassis frame rails with .625” diameter Grade 8 bolts. The vertical and horizontal members of the frame rail extensions are to be reinforced with welded gussets and extend to the outside edge of the body. The lateral frame extensions will be electro-coated for superior corrosion resistance.

The “floating substructure” will be separated from the lateral frame extensions with neoprene elastomer isolators. These isolators will reduce the natural flex stress of the chassis from being transmitted to the body, and absorb road shock and vibration.

The isolators will have a broad load range, proven viability in vehicular applications, be of a fail safe design and allow for all necessary movement in three transitional and rotational modes.

The neoprene isolators shall be installed in a modified “V” three point mounting pattern to reduce the natural flex of the chassis being transmitted to the body. A minimum of twelve 2.55" diameter isolators shall be provided, four under each front compartment and two under each rear side compartment. A minimum of four 3.50" diameter isolators shall be provided under the rear compartment.

A design with body compartments simply hanging/sitting on the chassis in an unsupported (cantilever) fashion will not be acceptable.

AGGRESSIVE WALKING SURFACE

All exterior surfaces designated as stepping, standing, and walking areas will comply with the required average slip resistance of NFPA section 13-7.3. Documentation of the material meeting the standard will be provided at time of delivery.

LOUVERS

All body compartments will have a minimum of one set of automotive style, dust resistant louvers pressed into a wall. The louvers will incorporate a one way rubber valve that provides airflow out of the compartment and prevents water and dirt from gaining access to the compartment. Each louver will be 3.00" wide x 8.50" tall.

TESTING OF BODY DESIGN

Body structural analysis will be fully tested. Proven engineering and test techniques such as finite element analysis, and strain gauging have been performed with special attention given to fatigue life, and structural integrity of the body and substructure.

The body will be tested while loaded to its greatest in-service weight.

The criteria used during the testing procedure will include:

- Raising opposite corners of the vehicle tires 9.00" to simulate the twisting a truck may experience when driving over a curb
- Making a 90 degree turn, while driving at 20 mph to simulate aggressive driving conditions

- Driving the vehicle on at 35 mph on a "washboard" road
- Driving the vehicle at 55 mph on a smooth road
- Accelerating the vehicle fully, until reaching the approximate speed of 45 mph on rough pavement.

Evidence of the actual testing techniques will be made available upon request.

FEA will have been performed on all substructure components.

BODY WARRANTY

A copy of the fire apparatus manufacturer's warranty will be included with the bid. The warranty will state that the body will be free of structural failures caused by defective design or workmanship for a warranty period of **ten years** from the date the new vehicle is first delivered **or 100,000 miles,** whichever occurs first and that defective parts, under the warranty, will be repaired or replaced without charge to the original purchaser.

COMPARTMENTALIZATION, DRIVER'S SIDE

A full height, roll-up door compartment near the front of the body, ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be 31.00" wide x 54.12" high x 26.00" deep in the lower 54.12" of the compartment. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 28.25" wide x 54.12" high.

A full height, roll-up door compartment immediately ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be 50.50" wide x 54.12" high x 26.00" deep in the lower 54.12" of the compartment. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 47.75" wide x 54.12" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A roll-up door compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be 60.00" wide x 22.38" high x 26.00" deep in the lower 22.38" of the compartment. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The clear door opening of this compartment shall be 57.25" wide x 22.38" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A full height, roll-up door compartment behind the rear wheels shall be provided. The interior dimensions of this compartment shall be 52.00" wide x 54.12" high x 26.00" deep in the lower 54.12" of the compartment. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 49.25" wide x 54.12" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

All compartments shall include a drip pan below the roll of the door.

COMPARTMENTALIZATION, PASSENGER'S SIDE

A full height, jump off compartment with a roll-up door near the front of the body, ahead of the rear wheels shall be provided, as convenient large storage compartment for often used items for the crew. The interior dimensions of this compartment shall be 42.00" wide x 54.12" high x 26.00" deep. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 39.00" wide x 54.12" high.

A full height, roll-up door compartment immediately ahead of the rear wheels shall be provided. The interior dimensions of this compartment shall be 42.00" wide x 54.12" high x 26.00" deep. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 39.00" wide x 54.12" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A roll-up door compartment over the rear wheels shall be provided. The interior dimensions of this compartment shall be 60.00" wide x 22.38" high x 26.00" deep. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The clear door opening of this compartment shall be 57.00" wide x 22.38" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

A full height, roll-up door compartment behind the rear wheels shall be provided. The interior

dimensions of this compartment shall be 52.00" wide x 54.12" high x 26.00" deep. The area behind the roll up door spool shall be notched for exterior storage or larger capacity water tank tee. The depth of the compartment shall be calculated with the compartment door closed. The compartment interior shall be fully open from the compartment ceiling to the compartment floor and designed so that no permanent dividers are required between the upper and lower sections. The clear door opening of this compartment shall be 49.00" wide x 54.38" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

All compartments shall include a drip pan below the roll of the door.

ROLL-UP DOOR, SIDE COMPARTMENTS

Eight compartment doors shall be installed on the side compartments, double faced, aluminum construction, an anodized satin finish.

Lath sections shall be an interlocking rib design and shall be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint shall be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals shall allow door to operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals shall be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces shall be nylon 66. All nylon components shall withstand temperatures from plus 300 to minus 40 degrees Fahrenheit. Hardened plastic shall not be acceptable.

A polished stainless steel lift bar shall be provided for each roll-up door. A lift bar shall be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge shall be supplied over lift bar for additional area to aid in closing the door.

Door(s) shall be constructed from an aluminum box section. The exterior surface of each slat shall be flat. The interior surfaces shall be concave to provide strength and prevent loose equipment from jamming the door from inside.

To conserve space in the compartment(s), the spring roller assembly shall not exceed 3.00" in diameter. A roll-up door that retracts below the compartment ceiling (garage door style) shall not acceptable.

The header for the roll-up door assembly shall not exceed 4.00".

A heavy-duty magnetic switch shall be used for control of "open compartment door" warning lights.

All mechanical components of the door shall be warranted to be free from defects in materials and workmanship for the lifetime of the vehicle. All parts covered under this warranty shall be to the

original owner.

The roll up doors exterior paint finish shall be warranted against blistering, peeling, bubbling, lack of adhesion or any other manufacturing or material defect for a period of **six years**.

The roll up doors shall also be warranted against corrosion perforation for a period of **ten years**.

COMPARTMENTALIZATION, REAR

A roll-up door compartment above the rear tailboard shall be provided.

Interior dimensions of this compartment shall be 40.00" wide x 42.38" high x 25.88" deep in the lower 33.75" of height and 15.75" deep in the remaining upper portion. Depth of the compartment shall be calculated with the compartment door closed.

A removable access panel shall be furnished on the back wall of the compartment.

Rear compartment shall be open to the rear side compartments. The transverse opening shall be a minimum of 22.00" wide x 30.50" high.

Clear door opening of this compartment shall be 33.25" wide x 33.75" high.

Closing of the door shall not require releasing, unlocking, or unlatching any mechanism and shall easily be accomplished with one hand.

ROLL-UP DOOR, REAR COMPARTMENT

The rear compartment shall have a swing down tailboard as the lower section of the door and a roll door for the upper section.

The roll-up door shall be of an anodized satin finish and double faced aluminum construction.

Lath sections shall be an interlocking rib design and shall be individually replaceable without complete disassembly of door.

Between each slat at the pivoting joint shall be a PVC inner seal to prevent metal to metal contact and prevent dirt or moisture from entering the compartments. Seals shall allow door to operate in extreme temperatures ranging from plus 180 to minus 40 degrees Fahrenheit. Side, top and bottom seals shall be provided to resist ingress of dirt and weather and be made of Santoprene.

All hinges, barrel clips and end pieces shall be nylon 66. Hardened plastic shall not be acceptable.

A polished stainless steel lift bar shall be provided for opening door. Lift bar shall be located at the bottom of door and have latches on the outer extrusion of the doors frame. A ledge shall be supplied over lift bar for additional area to aid in closing the door.

Door(s) shall be constructed from an aluminum box section. The exterior surface of each slat shall be flat. The interior surfaces shall be concave to provide strength and prevent loose equipment from

jamming the door from inside.

To conserve space in the compartment(s), the spring roller assembly shall not exceed 3.00" in diameter. A roll-up door that retracts below the compartment ceiling (garage door style) shall not acceptable.

The header for the roll-up door assembly shall not exceed 4.00".

A heavy-duty magnetic switch shall be used for control of "open compartment door" warning lights.

All mechanical components of the door shall be warranted to be free from defects in materials and workmanship for the lifetime of the vehicle. All parts covered under this warranty shall be to the original owner.

HATCH COMPARTMENTS

Hatch compartments 214.00" long x 14.00" wide x 28.00" maximum depth shall be provided above both side body compartments, with two lift-up top opening hatch doors.

Compartment(s) shall extend the full length of the side body compartmentation except for a 19" recessed step area at the rear of the compartment on the access ladder side.

Sides of the compartment(s) shall be constructed of the same material as the body and painted job color on the outside panels.

Top of the compartment(s) shall be constructed of bright aluminum tread-plate.

Two lift-up, bright aluminum tread-plate doors shall be provided on the top of the compartment(s), each with a slam style latch with lever handle to hold the doors in the closed position.

Double pan doors shall have lipped edges with a rubber seal for weather resistance.

Doors shall be hinged on the outboard side and shall be held open with chain.

Compartment shall have a 3/4" drain that extends to below the body.

Ribbed rubber matting shall be provided on the compartment floor to stop wet equipment from sitting in water pools.

Compartment shall be lit with strip lighting.

HATCH COMPARTMENT LIGHTING

A strip light shall be mounted on the interior, hinged side of each door. Opening the hatch compartment door shall automatically turn this hatch compartment lighting on.

PULL-OUT TRAY

There shall be three slide-out trays, without sides, and a minimum capacity of 500 pounds provided.

Capacity rating shall be in the extended position.

The tray shall be constructed of .19" aluminum.

Slides shall be ball bearing type for ease of operation and years of dependable service.

Automatic locks shall be provided for both the "in" and "out" positions. The trip mechanism for it shall be located at the front of the tray for ease of use with a gloved hand.

Tray location shall be identified.

A heavy-duty assembly shall support the body under the compartment floor. It shall be attached to the chassis frame for load transfer and to reduce stress on body.

SLIDE-OUT/TILT-DOWN TRAY

There shall be three slide-out trays provided.

The capacity rating (in the extended position) shall be 215 pounds minimum.

Approximately two-thirds of the tray shall slide-out from its stored position and shall tilt 30 degrees down from horizontal. The vertical position within the compartment shall be adjustable.

Construction shall consist of .188" thick aluminum for the tray bottom and end, and special aluminum extrusions for the tray sides, front and tracks.

The tray corners shall be welded for strength and rigidity.

The tray shall be equipped with ball bearing rollers for smooth operation.

Two spring loaded locks shall be provided at the front of the tray, one on each end.

Rubber padded stops shall be provided for both the in out tray position.

The tray(s) location is to be determined.

LITTLE GIANT LADDER STORAGE

Storage shall be provided in the passenger's side forward jump compartment for a 17' Little Giant ladder. The ladder shall be horizontal on the floor. A shelf shall be provided directly above the ladder.

BACKBOARD STORAGE

Mounting shall be provide for two Backboard (s) located above the crosslays. The boards shall be enclosed and removeable from either side of the truck. The backboards shall be to be determined.

HOPPER, OIL DRY

There shall be a hopper installed in the PS Rear Hatch compartment for storage of 250# of oil dry absorbant material. The hopper shall have a hand valve on the bottom to control the release of the material. A flip down chute shall be furnished below the valve to direct the material to the outside of the compartment.

ALUMINUM PEGBOARD

Two horizontally installed tracks, with .19" aluminum pegboard shall be installed on the back wall of two compartments. The holes shall be .19 diameter, punched 1.00" on center. The pegboard shall be unpainted with a DA finish. The locations are to be determined.

Retainers shall be used to mount the pegboard to the tracks.

AIR BAG STORAGE

There shall be a rack installed for storing six air bags in the to be determined compartment.

The rack shall be fabricated from .125" aluminum, painted to match the compartment interior. The fire department shall provide exact sizes of air bags prior to construction. The size of the air bags shall be TBD.

SLIDE OUT TOOLBOARD

A slide out aluminum tool board shall be provided.

It shall be a minimum of .188" thick with .20" diameter holes in a pegboard pattern with 1.00" centers between holes.

A 1.00" x 1.00" aluminum tube frame shall be welded to the edge of the pegboard.

The board shall be mounted on a track on the bottom to allow easy extension and retraction with a maximum tool load of 250 lb.

The slide shall be mounted to a shelf type track to allow side adjustment of the tool board.

The board shall have positive lock in the stowed and extended position.

There shall be two partitions provided.

Location to be determined.

SWING OUT TOOLBOARD

A swing out aluminum tool board shall be provided. It shall have a brushed finish, the same as the interior of the compartment.

It shall be a minimum of .188" thick with .20" diameter holes in a pegboard pattern with 1.00"

centers between holes.

A 1.00" x 1.00" aluminum tube frame shall be welded to the edge of the pegboard.

The board shall be mounted on a pivoting device on the top and bottom to allow easy movement in and out of the compartment. The maximum tool load shall be 400 pounds.

The board shall have positive lock in the stowed and extended position.

There shall be one provided and installed in a location that has yet been determined.

MOUNTING TRACKS

There shall be recessed tracks installed vertically to support the adjustable shelf(s).

Tracks shall not protrude into any compartment in order to provide the greatest compartment space and widest shelves possible.

The tracks shall be provided in each compartment except for the one that contains the pump operator's panel.

ADJUSTABLE SHELVES

There shall be seven shelves, with a minimum capacity of 500 pounds provided. The shelf construction shall consist of brushed aluminum with 2.00" sides. Each shelf shall be infinitely adjustable by means of a threaded fastener, which slides in a track.

The shelves shall be held in place by .12" thick stamped plated brackets and bolts.

The location of the seven shelves has yet to be determined.

RUB RAIL

Bottom edge of the side compartments shall be trimmed with a bright aluminum extruded rub rail.

Trim shall be 3.00" high with 1.50" flanges turned outward for rigidity.

The rub rails shall not be an integral part of the body construction, which allows replacement in the event of damage.

Rub rails shall be attached with bolts and spaced from the body with isolators that shall help to absorb any moderate impact without damaging the body.

BODY FENDER CROWNS

Polished stainless steel fender crowns shall be provided around the rear wheel openings.

A brushed stainless steel unpainted fender liner shall be provided to avoid paint chipping. The liners shall be removable to aid in the maintenance of rear suspension components.

A dielectric barrier shall be provided between the fender crown fasteners (screws) and the fender sheet metal to prevent corrosion.

The fender crowns shall be held in place with stainless steel screws that thread directly into a composite nut and not directly into the parent body sheet metal to eliminate dissimilar metals contact and greatly reduce the chance for corrosion.

HARD SUCTION HOSE
Hard suction hose shall not be required.

Two handrails shall be provided mounted location to be specified at pre build conference.

AIR BOTTLE STORAGE (Double)
A total of four air bottle compartments shall be provided. one in front and back of rear wheels on both sides.. The air bottle compartment shall be 15.00" wide x 7.50" tall x 26.00" deep. A stainless steel door with a chrome plated latch shall be provided to contain the air bottle. A dielectric barrier shall be provided between the door hinge, hinge fasteners and the body sheet metal.

AIR BOTTLE STORAGE INSERT
A total of four inserts shall be provided for the air bottle storage compartments.

The inserts shall be "W" shaped and be formed from composite materials.

GROUND LADDERS
The following ladders shall be furnished and must meet or exceed the latest NFPA standards:

- 24', two section, aluminum
- 14' roof, aluminum.

LADDER STORAGE
The ladders shall be stored inside the upper section of the passenger's side compartments. This ladder rack shall reduce the depth of the upper section in the side compartments.

A partition shall be installed inside the compartment on the side of the rack to allow for equipment storage and to conceal the ladders.

The ladders shall be banked in separate storage troughs.

The ladder storage assembly shall be fabricated of stainless steel track channels to aid in loading and removal of ladders.

Rear of the ladder storage area shall have a vertically hinged aluminum tread-plate door with lift-and-turn latches to contain the ladders.

FOLDING LADDER
One aluminum 10' folding ladder shall be installed in a U-shaped trough inside the ladder storage compartment.

PIKE POLE/FOLDING LADDER COMPARTMENT

One pike pole compartment shall be provided, recessed in the upper, inside part of body compartment on the passenger's side. The compartment shall be equipped with two aluminum tubes to hold two pike poles and a stainless steel trough for the folding ladder. The door shall be made of aluminum tread-plate and have a lift and turn latch.

LONG ITEM STORAGE COMPARTMENT

One compartment shall be provided, recessed in the upper, inside part of body compartment on the passenger's side for storage of long handle tools. The door shall be made of aluminum tread-plate and have a lift and turn latch.

PIKE POLE/FOLDING LADDER COMPARTMENT

One pike pole compartment shall be provided, recessed in the upper, inside part of body compartment on the driver's side. The compartment shall be equipped with two aluminum tubes to hold two pike poles and a stainless steel trough for the folding ladder. The door shall be made of aluminum tread-plate and have a lift and turn latch.

LADDER, TOP ACCESS

A wide easy climbing access ladder, constructed of aluminum rungs and extruded aluminum rails, shall be provided on the right side at the rear of the apparatus. The inside climbing area of the ladder shall be 16.00" wide

The lower section of the ladder shall be retractable into the upper section to eliminate interference with the rear FMVSS lights. When lowered the bottom rung shall be lower than the body, approximately 16.00" to 20.00" from the ground to allow a lower first step height.

The ladder shall be slanted when in use for easy access, and fold against the body for storage to reduce the overall length. Corrosion resistant, stainless steel spring-loaded locks shall hold the ladder in place.

Two additional folding steps shall be located Pre build conference. The step(s) shall be bright finished, non-skid luminescent folding type. The luminescent coating is rechargeable from any light source and can hold a charge for up to 24 hours. The step(s) can be used as a hand hold with two openings wide enough for a gloved hand.

PUMP

Pump shall be a low profile, single stage pump, 1500 gpm, and mid-ship mounted centrifugal type, mounted below the cab. The pump shall have a 15% reserve capacity to allow for extended time between pump rebuild. To ensure efficient pump/vehicle design the capacity to weight ratio shall not be less than 1.5:1.

The pump casing shall consist of three discharge outlets, one to each side in line with the impeller and one to the rear. The pump casing shall incorporate two water strippers to maintain radial balance.

Pump shall be the class "A" type.

Pump shall be certified to deliver the percentage of rated discharge from draft at pressure indicated below:

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

The pump shall have the capacity to deliver the percentage of rated discharge from a pressurized source as indicated below:

- 200% of rated capacity at 100 psi net pump pressure from a 5 psi source.

Pump body shall be fine-grained gray iron. Pump shall incorporate a heater/cooling jacket integral to the pump housing.

The impeller shall be high strength vacuum cast bronze alloy accurately machine balanced and splined to a 10 spline stainless steel pump shaft for precision fit, exceptional durability, and efficiency. Double replaceable reverse flow labyrinth type bronze wear ring design shall help to minimize end thrust. The impeller shall be a twisted vane design to create higher lift. No keyed shafts will be acceptable.

The pump shall include o-ring gaskets throughout the pump.

Deep groove radial type oversize ball bearings shall be provided. The bearings shall be protected at the openings from road dirt and water with an oil seal and a water slinger.

The pump shall have flat, patterned area on the top of the pump intake wye to allow standing for plumbing maintenance. The main inlet manifold shall be 6" in diameter and low profile design to facilitate low cross lays and high flows.

For ease of service, the pump housing, intake wye, impeller, mechanical seal, and gear case shall be accessible from above the chassis frame, accessible by tilting the cab. The intake wyes shall be removable without having to remove the main intake casting. Removal of the main inlet wyes shall provide access to the impeller, mechanical seal, and wear ring. (NO EXCEPTIONS)

The tank to pump line and the primary discharge line shall be the only piping required to be removed for overhaul.

For ease of service and overhaul there shall be no piping or manifolding located directly over the pump. (NO EXCEPTIONS)

PUMP MOUNTING

Pump shall be mounted to the chassis frame rails directly below the crew cab, to minimize wheelbase and facilitate service, using rubber isolators in a modified V pattern that include two central mounted isolators located between the frame rails, and one each side outside the frame rails. The mounting shall allow chassis frame rails to flex independently without damage to the fire pump.

Each isolator shall be 2.55" in total outside diameter and shall be rated at 490 pounds. The pump shall be completely accessible by tilting the cab with no piping located directly above the pump.

MECHANICAL SEALS

Silicon carbide mechanical seals shall be provided. The seals shall be spring loaded and self-adjusting. The seals shall have a minimum thermal conductivity of 126 $w/m^{o}k$ to run cooler. Seals shall have a minimum hardness of 2800 kg/mm^2 to be more resistant to wear, and have thermal expansion characteristics of no more than 4.0 $X10^{6}mm/mm^{o}K$ to be more resistant to thermal shock.

PUMP GEARCASE

Pump gear case shall be a pressure-lubricated gear case to cool, lubricate, and filter the oil. The gear case shall include an auxiliary PTO opening. Gear case shall be constructed of lightweight aluminum, and impregnated with resin in accordance to MIL Spec MIL-I-17563. A dipstick, accessible by tilting the cab, shall be provided for easy fluid level checks. A filter screen shall be provided for long life.

The gear case shall consist of two gears to drive the pump impeller and one for the auxiliary PTO.

The auxiliary PTO opening shall provide for the addition of PTO driven accessories.

The pump shall be driven through the rear engine power take-off and clutch. The rear engine power take-off drive shall be live at all times to allow for pump and roll applications. Rear engine power take-offs allow for high horsepower and torque ratings needed for large pump applications, and is a proven drive system throughout the rugged construction industry. (NO EXCEPTIONS)

CLUTCH

" Sure Shift Technology" shall incorporate a heavy-duty electric clutch mounted directly to the front of the pump to engage and disengage the pump without gear clash. The clutch shall be a multiple disc design for maximum torque. The clutch shall be fully self-adjusting to provide automatic wear compensation, and consistent torque throughout the life of the clutch. Positive engagement and disengagement shall be provided through a high efficient and dependable magnetic system to assure superior performance. The clutch shall have a 500 lb-ft rating. Clutch shall be of a time-tested design used in critical military applications. (**NO EXCEPTIONS**)

PUMPING MODE

Pump shall provide for both pump and roll mode and stationary pumping mode.

Stationary pumping mode shall be accomplished by stopping the vehicle, setting the parking brake and engaging the water pump switch on the cab switch panel. The transmission shall shift to "Neutral" range automatically when the parking brake is set. The "OK to Stationary Pump" indicator shall also illuminate when the parking brake is set. If the vehicle is equipped with a foam system or CAFS system, these systems shall be engaged from the cab switch panel as well.

Pump and roll mode shall be accomplished by the use of the main pump and shall not require the use of a secondary pump. Pump and roll mode shall use the same operation sequence as stationary

pumping mode with a few additional steps. After the vehicle is setup for stationary pumping, the operator shall leave the cab and set-up the pump panel to discharge at the desired outlet(s). Upon returning to the cab, the operator shall disengage the parking brake. An "OK to Pump & Roll" indicator shall illuminate on the cab switch panel. First gear on the transmission gear selector shall be selected by the operator for pump and roll operations. The operator as needed shall apply the foot throttle. Pump and roll mode shall be maintained unless the transmission shifts out of first gear.

Stopping either stationary pumping mode or pump and roll mode shall be accomplished by pressing the "Water Pump" switch down to disengage the pump.

PUMP SHIFT

Pump shall be engaged in not more than two steps, by simply setting the parking brake, which will automatically put the transmission into neutral, and activating a rocker switch in the cab. Switches in the cab shall also allow for water, foam, or CAFS if equipped, and activate the appropriate system to preset perimeters. The engagement shall provide simple two-step operation, enhance reliability, and completely eliminate gear clash. The shift shall include the indicator lights as mandated by NFPA. A direct override switch shall be located behind a door in the lower pump operator's panel. The switch shall automatically disengage when the door is closed.

As the parking brake is applied, the pump panel throttle shall be activated and deactivate the chassis foot throttle for stationary operation.

Pump and roll operation shall be available by releasing the parking brake with the pump in the pumping mode. Releasing the parking brake shall activate the chassis foot throttle, and deactivate the pump panel throttle. To protect from accidental pump overheating, the pump shall automatically disengage when the truck transmission shifts into second gear.

TRANSMISSION LOCK UP

Transmission lock up is not required as transmission shall automatically shift to neutral as soon as the parking brake is set.

AUXILIARY COOLING SYSTEM

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

INTAKE RELIEF VALVE

An Akron relief valve shall be installed on the suction side of the pump preset at 125 psig.

Relief valve shall have a working range of 75 psig to 200 psig.

Outlet shall terminate below the frame rails with a 2.50" National Standard hose thread adapter and shall have a "do not cap" warning tag.

Control shall be located behind an access door at the right (passenger's) side pump panel.

PRESSURE CONTROLLER

A Pressure Governor shall be provided. An electric pressure governor shall be provided which is capable of automatically maintaining a desired preset discharge pressure in the water pump. When operating in the pressure control mode, the system shall automatically maintain the discharge pressure set by the operator (within the discharge capabilities of the pump and water supply) regardless of flow, within the discharge capacities of the water pump and water supply.

A pressure transducer shall be installed in the water discharge of the pump. The transducer continuously monitors pump pressure sending a signal to the Electronic Control Module (ECM).

The governor can be used in two modes of operation, RPM mode and pressure modes.

In the RPM mode, the governor can be activated after vehicle parking brake has been set. When in this mode, the governor shall maintain the set engine speed, regardless of engine load (within engine operation capabilities).

In the pressure mode, the governor system can only operate after the fire pump has been engaged and the vehicle parking brake has been set. When in the pressure mode, the pressure controller monitors the pump pressure and varies engine speed to maintain a precise pump pressure. The pressure controller shall use a quicker reacting J1939 database for engine control. (excluding Cat engines)

A preset feature allows a predetermined pressure or rpm to be set.

A pump cavitations protection feature is also provided which shall return the engine to idle should the pump cavitate. Cavitation is sensed by the combination of pump pressure below 30 psi and engine speed above 2000 rpm for more than five seconds.

The throttle shall be a vernier style control, with a large control knob for use with a gloved hand. A throttle ready light shall be provided adjacent to the throttle control. A large .75" RPM display shall be provided to be visible at a glance.

Check engine, and stop engine indicator lights shall be provided for easy viewing.

Large .75" push buttons shall be provided for menu, mode, preset, and silence selections.

The water tank level indicator shall be incorporated in the pressure governor.

A fuel level indicator shall be incorporated in the pressure controller.

A pump hour meter shall be incorporated in the pressure controller.

The pressure controller shall incorporate monitoring for engine temperature, oil pressure, fuel level alarm, and voltage. Pump monitoring shall include, pump gear case temperature, error codes, diagnostic data, pump service reminders, and time stamped data logging, to allow for fast accurate trouble shooting. It shall also notify the driver/engineer of any problems with the engine and the

apparatus. Complete understandable messages shall be provided in a 20-character display, providing for fewer abbreviations in the messages. An automatic dim feature shall be included for night operations.

The pressure controller shall include a USB port for easy software upgrades, which can be downloaded through a USB memory stick, eliminating the need for a laptop for software installations.

A complete interactive manual shall be provided with the pressure controller.

PRIMING PUMP

Priming pump shall be a positive displacement vane type, electrically driven, and conforming to standards outlined in NFPA pamphlet #1901.

One priming control shall open the priming valve and start the priming motor.

Primer shall be environmentally safe and self lubricating.

PUMP WARRANTY

A six **year limited** warranty shall be provided for the pump. A copy of the six year limited warranty document on OEM letterhead shall be furnished with bid to provide further explanation of the pump warranty.

PUMP MANUALS

Two pump manuals from the pump manufacturer shall be furnished in compact disc format with the apparatus. Manuals shall cover pump operation, maintenance, overhaul, and parts.

PLUMBING

All inlet and outlet plumbing, 3.00" and smaller, shall be plumbed with either stainless steel pipe or synthetic rubber hose reinforced with high-tensile polyester braid. Small diameter secondary plumbing such as drain lines shall be stainless steel, brass or hose.

Where vibration or chassis flexing may damage or loosen piping or where a coupling is required for servicing, the piping shall be equipped with victaulic or rubber couplings.

Plumbing manifold bodies shall be ductile cast iron or stainless steel.

All lines shall drain through a master drain valve or shall be equipped with individual drain valves. All individual drain lines for discharges shall be extended with a hose to drain below the chassis frame.

All water carrying gauge lines shall be of flexible polypropylene tubing.

PUMP PLUMBING WARRANTY

The stainless steel plumbing components and ancillary brass fittings used in the construction of the water/foam plumbing system shall be warranted for a period of **ten years or 100,000 miles**.

This covers structural failures caused by defective design or workmanship, or perforation caused by corrosion, provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original purchaser for a period of ten years from the date of delivery. A copy of the warranty shall be submitted with the bid. (NO EXCEPTIONS)

MAIN PUMP INLETS

A 6.00" pump manifold inlet shall be provided on each side of the vehicle. The suction inlets shall include screens that are designed to provide cathodic protection for the pump, thus reducing corrosion in the pump.

Main pump inlets shall not be located on the main operator's panel and shall maintain a low connection height by terminating below the top of the chassis frame rail.

The main pump inlets shall have National Standard Threads with a long handle chrome cap.

The cap shall incorporate a thread design to automatically relieve stored pressure in the line when disconnected. (NO EXCEPTIONS)

VALVES

All discharges shall use in-line ball valves.

Valves shall have a ten year warranty.

INLET (Left side)

On the left side pump panel shall be one 2.50" auxiliary suction, terminating in 2.50" National Standard Hose Thread. The auxiliary suction shall be provided with a strainer, chrome swivel and plug.

INLET (Right side)

On the right side pump panel shall be one 2.50" auxiliary suction, terminating in 2.50" National Standard Hose Thread. The auxiliary suction shall be provided with a strainer, chrome swivel and plug.

The location of the valve for the two inlets shall be recessed behind the pump panel.

INLET CONTROL

Control for the side auxiliary inlet(s) shall be located at the inlet valve.

INLET BLEEDER VALVE

A .75" bleeder valve shall be provided for each side gated inlet. The valves shall be located behind the panel with a swing style handle control extended to the outside of the panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. The water discharged by the bleeders shall be routed below the chassis frame rails.

TANK TO PUMP

The booster tank shall be connected to the intake side of the pump with heavy duty 4.00" piping and a quarter turn 3.00" full flow line valve with the control located at the operator's panel. A rubber coupling shall be included in this line to prevent damage from vibration or chassis flexing.

A check valve shall be provided in the tank to pump supply line to prevent the possibility of "back filling" the water tank.

TANK REFILL
A 2.00" combination tank refill and pump re-circulation line shall be provided, using a quarter-turn full flow ball valve controlled from the pump operator's panel.

DISCHARGE OUTLETS (Left Side)
There shall be two discharges with a 2.50" valves on the left side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter. Discharges shall be located below the cab, and shall be no higher than the top of the chassis frame rail. Discharges shall not be located on the pump operator's panel. Lever controls shall be provided at the valve.

DISCHARGE OUTLETS (Right Side)
There shall be one discharge with a 2.50" valve on the right side of the apparatus, terminating with a male 2.50" National Standard hose thread adapter. The discharge shall be located below the crew cab, and shall be no higher than the top of the chassis frame rail. The discharge shall be electrically controlled at the pump operator's panel.

DISCHARGE OUTLET, 4.00"
There shall be a 4.00" discharge outlet with a 4.00" Akron valve body installed on the right side of the apparatus, below the cab, and shall be no higher than the top of the chassis frame rail, terminating with a male 4.00" National Standard hose thread. This discharge outlet shall be electrically controlled at the pump operator's control panel.

DISCHARGE OUTLET (Front)
A 1.50" gated discharge outlet shall be piped to the passenger's side on top of the front bumper extension.

Plumbing shall consist of 2.00" piping and flexible hose according to the design requirements of the chassis. A fabricated weldment made of black iron pipe shall be used in the plumbing were appropriate. A 2.00" full flow ball valve controlled at the pump operator's panel shall be used in the outlet plumbing. Automatic drains shall be provided at all low points of the piping.

DISCHARGE OUTLET (Hose bed)
There shall be one discharge outlet piped to the front of the hose bed, in the DS bed. Plumbing shall consist of 3.00" schedule 10 304L welded or formed stainless steel piping along with a 2.50" full flow ball valve with the control from the pump operator's panel. Discharge shall terminate with 2.50" NST thread.

DISCHARGE OUTLET (Hose bed)
There shall be one discharge outlet piped to the front of the hose bed, in the PS bed. Plumbing shall

consist of 2.00" schedule 10 304L welded or formed stainless steel piping along with a 2.00" full flow ball valve with the control from the pump operator's panel. Discharge shall terminate with 1.50" NST thread.

DISCHARGE CAPS

Chrome plated, rocker lug, caps with chains shall be furnished for all side discharge outlets.

The caps shall be the VLH, which incorporates a patent pending thread design to automatically relieve stored pressure in the line when disconnected. (NO EXCEPTIONS)

OUTLET BLEEDERS

A .75" bleeder valve shall be provided for each outlet 1.50" or larger. Automatic drain valves are acceptable with some outlets if deemed appropriate with the application.

The valves shall be located behind the panel with a swing style handle control extended to the outside of the side pump panel. The handles shall be chrome plated and provide a visual indication of valve position. The swing handle shall provide an ergonomic position for operating the valve without twisting the wrist and provides excellent leverage. Bleeders shall be located at the bottom of the pump panel. They shall be properly labeled identifying the discharge they are plumbed in to. The water discharged by the bleeders shall be routed below the chassis frame rails.

ELBOW, 4.00" OUTLET

The 4.00" outlet shall be furnished with a 4.00"(F) National Standard hose thread x 5.00" elbow adapter with cap.

DISCHARGE OUTLET CONTROLS

The discharge outlets shall incorporate a quarter-turn ball valve with the control located at the pump operator's panel. The valve operating mechanism shall indicate the position of the valve or an indicator shall be provided to show when the valve is closed.

The passenger's side discharges shall be electric control with the manual override located on the passenger side pump panel. All other outlets shall have manual swing handles that operate in a vertical up and down motion. These handles will be able to lock in place to prevent valve creep under pressure.

DELUGE RISER

A 3.00" deluge riser shall be installed above the pump in such a manner that a monitor can be mounted and used effectively. Piping shall be installed securely so no movement develops when the line is charged. A 2.50" gated valve shall be installed and controlled at the pump operator's panel. The deluge outlet shall provide 1000 GPM.

TELESCOPIC PIPING

The deluge riser piping shall include a 18.00" Electrically Actuated Extender.

This extension shall be telescopic to allow the deluge gun to be raised 18.00" increasing the range of

operation.

A control shall be mounted on the pump operator's panel to actuate the Extender. The wiring shall include a "Do not move vehicle" light inside the cab when the monitor is in the raised position.

MONITOR

An electric radio remote control waterway monitor shall be properly installed on the deluge riser.

The monitor shall be painted to match the body.

This monitor shall include all electric 12 VDC controls for the monitor.

The monitor shall include the automatic stow feature.

A remote control shall be installed on the pump operator's panel, and a wireless radio remote shall be furnished with loose equipment.

NOZZLE

An Elkhart #SM-1250E electrically controlled Select-O-Matic master stream nozzle shall be provided.

The deluge riser shall have male National Pipe Threads for mounting the monitor.

CROSS LAY HOSE BEDS

Two cross lays with 1.50" outlets shall be provided. Each bed to be capable of carrying 200 feet of 1.75" double jacketed hose and shall be plumbed with 2.00" i.d. schedule 10 304L welded or formed stainless steel pipe and gated with a 2.00" quarter turn ball valve. Threaded pipe shall not be acceptable. Cross lays shall be low mounted with the bottom of both cross lay trays no more than 11.00" above the frame rails for simple, safe reloading and deployment. (**NO EXCPETIONS**)

Outlets to be equipped with a 1.50" National Standard hose thread 90-degree swivel located in the hose bed so that hose may be removed from either side of apparatus.

The cross lay controls shall be at the pump operator's panel.

A removable tray shall be provided for the crosslay hosebed. The crosslay tray shall be constructed of black poly to provide a lightweight sturdy tray. Two hand holes shall be in the floor and additional hand holes shall be provided in the sides for easy removal and installation from the compartment. The floor of the trays shall be perforated to allow for drainage and hose drying. Trays shall be held in place by a mechanical spring loaded stainless steel latch that automatically deploys upon loading the trays to hold the trays in place during transit.

CROSS LAY HOSE BED, 2.50"

One cross lay with a 2.50" outlet shall be provided. The bed to be capable of carrying 200' of 2.5" hose and shall be plumbed with 2.50" i.d. schedule 10 304L welded or formed stainless steel pipe and gated with a 2.50" quarter turn ball valve. Threaded pipe shall not be acceptable.

The outlet to be equipped with a 2.50" National Standard hose thread 90 degree swivel located above the hose bed so that hose may be removed from either side of apparatus.

The cross lay shall be mounted above the lower 1.5" cross lays. The cross lay controls shall be at the pump operator's panel.

A removable tray shall be provided for the cross lay hose bed. The cross lay tray shall be constructed of black poly to provide a lightweight sturdy tray. Two hand holes shall be in the floor and additional hand holes shall be provided in the sides for easy removal and installation from the compartment. The floor of the trays shall be perforated to allow for drainage and hose drying. Tray shall be held in place by a mechanical spring loaded stainless steel latch that automatically deploys upon loading the tray to hold the trays in place during transit.

CROSSLAY HOSE RESTRAINT

Heavy black nylon webbing shall be provided across the ends of the cross lays.

PUMP CONTROL PANELS (Left Side Control)

Pump controls and gauges shall be located mid-ship at the left (driver's) side of the apparatus and properly identified.

The main pump operator's control panel shall be completely enclosed and located in the forward section of the body compartment, to protect against road debris and weather elements. The pump operator's panels shall be no more than 31.00" wide, and made in four sections with the center section easily removable with simple hand tools. For the safety of the pump operator, there shall be no discharge outlets or pump inlets located on the main pump operators panel.

Layout of the pump control panel shall be ergonomically efficient and systematically organized. The upper section shall contain the master gauges. This section shall be angled down for easy visibility. The center section shall contain the pump controls aligned in two horizontal rows. The pressure control device, engine monitoring gauges, electrical switches, and foam controls (if applicable) shall be located on or adjacent to the center panel, on the side walls for easy operation and visibility. The lower section shall contain the outlet drains.

Manual controls shall be easy moving 8" long lever style controls that operate in a vertical, up and down swing motion. These handles shall have a 2.25" diameter knob and be able to lock in place to prevent valve creep under any pressure. Bright finish bezels shall encompass the opening, be securely mounted to the pump operator's panel, and shall incorporate the discharge gauge bezel. Bezels shall be bolted to the panel for easy removal and gauge service. The driver's side discharges shall be controlled directly at the valve. There shall be no push-pull style control handles. (NO EXCEPTIONS)

Identification tags for the discharge controls shall be recessed within the same bezel. The discharge identification tags shall be color coded, with each discharge having its own unique color.

All remaining identification tags shall be mounted on the pump panel in chrome-plated bezels.

All discharge outlets shall be color coded and labeled to correspond with the discharge identification tag.

The pump panels for the mid-ship discharge and intake ports shall be located ahead of the body compartments with no side discharge or intake higher than the frame rail. The pump panels shall be easily removable with simple hand tools.

A recessed cargo area shall be provided at the front of the body, ahead of the water tank above the plumbing.

PUMP PANEL CONFIGURATION

The pump panel configuration shall be arranged and installed in an organized manner that will provide user-friendly operation.

PUMP AND GAUGE PANEL

The pump operators panel and gauge panels shall be constructed of stainless steel with a brushed finish. The pump panels on the driver and passenger's side shall be constructed of stainless steel with a brushed finish.

PUMP AND PLUMBING ACCESS

Simple access to the plumbing shall be provided through the front of the body area by raising the cab for complete plumbing service and valve maintenance. Access to valves shall not require removal of operator panels or pump panels. Access for rebuilding of the pump shall not require removal of more than the tank to pump line and a single discharge line. This access shall allow for fast, easy valve or pump rebuilding, making for reduced out of service times. Steps shall be provided for access to the top of the pump.

Access to the pump shall be provided by raising the cab. The pump shall be positioned such that all maintenance and overhaul work can be performed above the frame and under the tilted cab. The service and overhaul work on the pump shall not require the removal of operator panels or pump panels. Complete pump casing and gear case removal shall require no more than removal of the intake and discharge manifolds, driveline, coolers and a single discharge line. The pump case and gear case shall be able to be removed by lifting upward without interference from piping and be removable in less than 3 hours.

Engine monitoring graduated LED indicators shall be incorporated with the pressure controller.

- Check Transmission Warning Indicator Light
- Stop Engine Warning Indicator Light
- Check Engine Warning Indicator Light.

GAUGES, VACUUM and PRESSURE

The pump vacuum and pressure gauges shall be silicone filled.

The gauges shall be a minimum of 4.00" in diameter and shall have white faces with black lettering, with a pressure range of 30.00"-0-600#.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

The pump pressure and vacuum gauges shall be installed adjacent to each other at the pump operator's control panel.

Test port connections shall be provided at the pump operator's panel. One shall be connected to the intake side of the pump, and the other to the discharge manifold of the pump. They shall have 0.25 in. standard pipe thread connections and polished stainless steel plugs. They shall be marked with a label.

This gauge shall include a ten year warranty against leakage, pointer defect, and defective bourdon tube.

PRESSURE GAUGES

The individual "line" pressure gauges for the discharges shall be interlube filled.

They shall be a minimum of 2.00" in diameter.

Gauge construction shall include a Zytel nylon case with adhesive mounting gasket and threaded retaining nut.

Gauges shall have a pressure range of 30"-0-400#.

The individual pressure gauge shall be installed as close to the outlet control as practical.

This gauge shall include a ten year warranty against leakage, pointer defect, and defective bourdon tube.

WATER LEVEL GAUGE

An electric water level gauge shall be incorporated in the pressure controller that registers water level by means of nine LEDs. They shall be at 1/8 level increments with a tank empty LED. The LEDs shall be a bright type that is readable in sunlight, and have a full 180-degree of clear viewing.

To further alert the pump operator, the gauge shall have a warning flash when the tank volume is less than 25%, and shall have "Down Chasing LEDs when the tank is almost empty.

The level measurement shall be ascertained by sensing the head pressure of the fluid in the tank or cell.

MINI SLAVE UNIT

An electric water level gauge shall be provided in the cab, that registers water level by means of five LEDs. They shall be at 1/4 level increments with a tank empty LED. The LEDs shall be a bright type that is readable in sunlight, and have a full 180-degree of clear viewing.

WATER LEVEL GAUGE, CAB SIDES

There shall be two additional water level indicator, LED module, installed one of each side cab just behind crew cab doors..

This light module shall include four colored levels, and function similar to the water level indicator located at the operators panel:

- First green module indicates a full water level.
- Second blue module indicates a water level above 3/4 full.
- Third amber module indicates a water level above 1/2 full.
- Last red module indicates a water level above 1/4 full and empty.
    - Above 1/4 this light shall be steady burning.
    - At empty this light shall be flashing.

This module shall be activated when the parking brake is set.

LIGHT SHIELD

Illumination shall be provided for controls, switches, essential instructions, gauges, and instruments necessary for the operation of the apparatus and the equipment provided on it. External illumination shall be a minimum of five foot-candles on the face of the device. Internal illumination shall be a minimum of four foot lamberts.

Lights for the pump operator's panel shall be strip lighting at the forward doorframe and by an overhead light. The pump panels shall have a light on each side on the back of the cab.

ELECTRICAL HARNESSING INSTALLATION

To ensure rugged dependability, all 12-volt wiring harnesses installed by the apparatus manufacturer shall conform to the following specifications:

- SAE J1128 - Low tension primary cable
- SAE J1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring
- SAE J163 - Low tension wiring and cable terminals and splice clips
- SAE J2202 - Heavy duty wiring systems for on-highway trucks
- NFPA 1901 - Standard for automotive fire apparatus
- FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses
- SAE J1939 - Serial communications protocol
- SAE J2030 - Heavy-duty electrical connector performance standard
- SAE J2223 - Connections for on board vehicle electrical wiring harnesses
- NEC - National Electrical Code
- SAE J561 - Electrical terminals - Eyelet and spade type
- SAE J928 - Electrical terminals - Pin and receptacle type A

For increased reliability and harness integrity, harnesses shall be routed throughout the cab and chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes shall not be allowed.

Wiring shall be run in loom or conduit where exposed, and have grommets or other edge protection where wires pass through metal. Wiring shall be color, function and number coded. Wire colors shall be integral to each wire insulator and run the entire length of each wire. Harnessing containing multiple wires and uses a single wire color for all wires shall not be allowed. Function and number codes shall be continuously imprinted on all wiring harness conductors at 2.00" intervals. All wiring installed between the cab and into doors shall be protected by an expandable rubber boot to protect the wiring. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Electrical wiring and equipment shall be installed utilizing the following guidelines:

(1) All wire ends not placed into connectors shall be sealed with a heat shrink end cap. Wires without a terminating connector or sealed end cap shall not be allowed.
(2) All holes made in the roof shall be caulked with silicon. (NO EXCEPTION) Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.
(3) Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.
(4) For low cost of ownership, electrical components designed to be removed for maintenance shall be quickly accessible. For ease of use, a coil of wire shall be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work.
(5) Corrosion preventative compound shall be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation of the plug.
(6) Any lights containing non-waterproof sockets in a weather-exposed area shall have corrosion preventative compound added to the socket terminal area.
(7) All electrical terminals in exposed areas shall have DOW 1890 protective Coating applied completely over the metal portion of the terminal.
(8) Rubber coated metal clamps shall be used to support wire harnessing and battery cables routed along the chassis frame rails.
(9) Heat shields shall be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust shall be protected by a heat shield.
(10) Cab and crew cab harnessing shall not be routed through enclosed metal tubing. Dedicated wire routing channels shall be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab shall allow for easy routing of additional wiring and easy access to existing wiring.
(11) All braided wire harnesses shall have a permanent label attached for easy identification of the harness part number and fabrication date.
(12) All standard wiring entering or exiting the cab shall be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

BATTERY CABLE INSTALLATION

All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer shall conform to the following requirements:

- SAE J1127 - Battery Cable
- SAE J561 - Electrical terminals, eyelets and spade type
- SAE J562 - Nonmetallic loom
- SAE J836A - Automotive metallurgical joining
- SAE J1292 - Automotive truck, truck-tractor, trailer and motor coach wiring
- NFPA 1901 - Standard for automotive fire apparatus.

Battery cables and battery cable harnessing shall be installed utilizing the following guidelines:

(1) All battery cables and battery harnesses shall have a permanent label attached for easy identification of the harness part number and fabrication date.
(2) Splices shall not be allowed on battery cables or battery cable harnesses.
(3) For ease of identification and simplified use, battery cables shall be color coded. All positive battery cables shall be red in color or wrapped in red loom the entire length of the cable. All negative battery cables shall be black in color.
(4) For ease of identification, all positive battery cable isolated studs throughout the cab and chassis shall be red in color.
(5) For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus shall be coated to prevent corrosion.

ELECTRICAL COMPONENT INSTALLATION

All lighting used on the apparatus shall be, at a minimum, a two wire light grounded through a wired connection to the battery system. Lights using an apparatus metal structure for grounding shall not be allowed.

An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order. The results of the tests shall be recorded and provided to the purchaser at time of delivery.

STEP LIGHTS

There shall be two LED step lights shall be provided at the rear to illuminate the tailboard/step area.

These step lights shall be actuated with the perimeter scene lights.

REAR FMVSS LIGHTING

Three pairs of wrap around LED lights shall be provided. Each group shall include a stop-tail light, a directional light and a backup light.

The lights shall be mounted on the face of the rear body compartments.

Four red reflectors shall be provided.

A license plate bracket shall be mounted on the driver's side above the warning lights. A step lamp

shall illuminate the license plate.

The three identification lights located at the rear shall be installed per the following:

- LED lights
- As close as practical to the vertical centerline
- Centers spaced not less than six (6) inches or more than twelve (12) inches apart
- Red in color
- All at the same height.

The four clearance lights located at the rear shall be installed per the following:

- LED lights
- To indicate the overall width of the vehicle
- One each side of the vertical centerline
- All at the same height
- As near the top as practical
- To be visible from the rear and the side
    - One each side, facing the side
    - One each side, facing the rear.

Per FMVSS 108 and CMVSS 108 requirements.

"DO NOT MOVE APPARATUS" INDICATOR

A flashing red indicator light (located in the driving compartment) shall be illuminated automatically per NFPA (1996 edition, 9-11 or 1999 edition 11-11). The light shall be labeled "Do Not Move Apparatus If Light Is On".

DO NOT MOVE TRUCK MESSAGES

Messages shall be displayed on the gauge panel LCD located forward of the steering wheel directly in front of the driver whenever the Do Not Move Truck light is active. The messages shall designate the item or items not in the stowed for vehicle travel position (parking brake disengaged).

The following messages shall be displayed (where applicable):

- Do Not Move Truck
- DS Cab Door Open (Driver Side Cab Door Open)
- PS Cab Door Open (Passenger's Side Cab Door Open)
- DS Crew Cab Door Open (Driver Side Crew Cab Door Open)
- PS Crew Cab Door Open (Passenger's Side Crew Cab Door Open)
- DS Body Door Open (Driver Side Body Door Open)
- PS Body Door Open (Passenger's Side Body Door Open)
- Rear Body Door Open.
- DS Ladder Rack Down (Driver Side Ladder Rack Down)
- PS Ladder Rack Down (Passenger Side Ladder Rack Down)
- Deck Gun Not Stowed
- Lt Tower Not Stowed (Light Tower Not Stowed)
- Hatch Door Open

- Fold Tank Not Stowed (Fold-A-Tank Not Stowed)
- Aerial Not Stowed (Aerial Device Not Stowed)
- Stabilizer Not Stowed
- Steps Not Stowed
- Handrail Not Stowed

Any other device that is opened, extended, or deployed that creates a hazard or is likely to cause major damage to the apparatus if the apparatus is moved shall be displayed as a caution message after the parking brake is disengaged.

COMPARTMENT LIGHTING

Rope style compartment lights shall be provided in each compartment. One strip shall be mounted vertically along each side of the door framing. There shall be nine pairs provided, two in each compartment.

Opening the compartment door, shall automatically turn the compartment lighting on.

PUMP COMPARTMENT LIGHT

A pump compartment light shall be provided inside the plumbing area.

A .125" weep hole shall be provided in each light lens, preventing moisture retention.

PERIMETER SCENE LIGHTS, CAB

There shall be a 4.00", LED, grommet mount weatherproof light provided for each cab door. Lighting shall be designed to provide illumination on areas under the driver, officer, and crew cab riding area exits, which shall be activated automatically when the exit doors are opened, by the door jam switch and by the same means as the body perimeter lights.

The lighting shall be capable of providing illumination at a minimum level of one foot-candle on ground areas within 30.00" of the edge of the apparatus in areas which personnel climb in or out of the apparatus or descend from the apparatus to the ground level.

PERIMETER SCENE LIGHTS, BODY

There shall be a total of four LED lights provided on the apparatus. Each light shall consist of a 4.00" weatherproof LED light, rubber mount, and pigtail kit.

The lights shall be mounted in the following locations:

- Two lights shall be provided under the rear step area
- One light shall be provided each side under the pump panel running boards.

The lighting shall be capable of providing illumination at a minimum level of one footcandle on ground areas within 30.00" of the edge of the apparatus in areas designed for personnel to climb onto the apparatus or descend from the apparatus to the ground level.

The lights shall be activated by a parking brake control and driver's side overhead switch panel and

officer's side overhead switch panel.

ADDITIONAL PERIMETER LIGHTS
There shall be two lights in addition to the normal body perimeter lights installed one on each side just behind of rear wheels.

These additional lights shall be LED lights.

12 VOLT LIGHTING
A 12VDC HID light shall be provided. The light shall be mounted on a special bracket on the front of the cab roof. Bracket will be sized to fit the light.

Light head shall be 12 volt, draw 12.5 amps, produce 11,250 Lumens, and a 150 watt HID bulb.

All wiring used shall be a minimum of 10 gauge wire in loom that is properly supported and protected from injury.

The light shall be controlled by:

- From the first switch feature, a control at the driver side switch panel
- From the second switch feature, a control at the officer side switch panel
- From the third switch feature, there shall be no control of this option.

These lights may be load managed when the parking brake is set.

DECK LIGHTS
One 6.00" Unity AG deck light with swivel mount shall be provided at the front of the hose bed, centered. This light shall have a switch on the light head.

The light shall be furnished with a 6,000 candle power halogen flood bulb.

REAR WORK LIGHTS
One pair of Code 3® model 41*15 50 watt scene lights shall be installed at the rear of the body to the outside of rear compartment. The lights shall have a prismatic inner lens to redirect light downward 15 degrees.

The lights shall be provided with 7E flange Kit.

The lights shall be controlled by a control from the driver side switch panel.

REAR VISION SYSTEM
A backup camera system shall be provided. There shall be one camera located at the rear of the truck as close to the center as possible for viewing the area behind the truck. The camera shall be activated whenever the ignition switch is active. The camera images shall be displayed on the apparatus 6.8" LCD color monitor whenever the apparatus transmission is placed into reverse. The color monitor shall be located in view of the driver on the overhead panel.

Components shall include:

- One color camera kit.
- One video cable from the camera to the display
- One 6.8" LCD color monitor and mounting brackets
  All necessary automated control hardware and wiring

GUARD, REAR BODY CAMERA

An aluminum tread-plate guard shall be fastened over the rear body camera to protect from damage and theft.

AIR HORN SYSTEM

Two air horns shall be provided and located, in the front bumper, recessed outside of frame. The horn system shall be piped to the air brake system wet tank utilizing .38" tubing. A pressure protection valve shall be installed in-line to prevent loss of air, in the air brake system.

AIR HORN CONTROL

The air horns shall be actuated by a push button located on officer side instrument panel and by the horn button in the steering wheel. The driver shall have the option to control the air horns or the chassis horns from the horn button by means of a selector switch located on the instrument panel.

ELECTRONIC SIREN

An electronic siren with noise canceling microphone shall be provided.

Electronic siren head shall be recessed in the overhead console above the engine tunnel on the driver side.

Siren shall be actuated by a foot switch on the officer's side and by the horn button in the steering wheel. The driver shall have the option to control the siren or the chassis horns from the horn button by means of a selector switch.

SPEAKER

There shall be one speaker recessed in the front bumper. Each speaker shall be cast aluminum, 100-watt, flange mount with polished aluminum finish. Each speaker shall be connected to the siren amplifier.

MECHANICAL SIREN, (Auxiliary)

A mechanical siren shall be furnished. A siren brake button shall be installed on the switch panel.

The mechanical siren shall be mounted on the bumper deck plate. It shall be mounted on the left side. A reinforcement plate shall be furnished to support the siren.

SWITCHES, MECHANICAL SIREN

The mechanical siren shall be actuated by one foot switch located on the driver's side and a push button switch on the officer's side of cab.

WARNING LIGHTS
A LED light bar shall be mounted on the cab roof.

The length of the light bar shall be 77".

The light bar shall include the following:

- Four red flashing forward facing LED modules
- Two clear flashing forward facing LED modules
- Two red flashing front corner LED modules
- One red flashing driver side facing LED module
- One red flashing officer side facing LED module.

All the lenses shall be clear.

One switch located in the cab, on the switch panel, shall control this light bar.
The clear warning lights shall be turned off when the parking brake is set.

HEADLIGHT FLASHER
The high beam headlights shall flash alternately between the left and right side, with a control switch located on the cab instrument panel.

The flashing shall automatically cancel when the headlight switch is activated or when the parking brake is set.

SIDE ZONE LOWER LIGHTING
Six flashing super LED lights shall be located at the following positions:

- Two lights, one each side on the bumper extension - red Super LED/red lens each side
- Two lights, over the front wheels close to the crew doors - red Super LED/rd lens each side
- Two lights, N/A - red Super LED/red lens each side.

The lights shall be controlled by a lighted switch on the cab instrument panel.

These lights shall be installed with three pair of flange kits.

REAR ZONE LOWER LIGHTING
Two flashing LED lights shall be located at the rear of the apparatus required to meet the lower level optical warning and optical power requirements of NFPA.

The color of these lights shall be red LED/clear lens

These lights shall be installed with a flange.

TRAFFIC DIRECTING LIGHT

One 36" traffic directing light shall be recessed with 4-way aluminum trim plate, on the rear of the vehicle.

This light shall include six amber LED modules.

One control head, located below the siren on swivel bracket between driver and officer shall be included with this installation. This control shall be activated by the control head only.

WARNING LIGHTS (Rear and Side upper zones)

Eight super LED lights shall be provided to meet the NFPA upper zone B, C and D lighting requirements:

The following lights shall be provided at the rear upper bulkhead, facing the rear of the truck (Upper zone C):

- One 9 x 7 super LED light each side as high and as far to the outside as practical, and will be provided with flange kit
  - The color of these lights shall be red Super LED/red lens

- Two 7 x 3 super LED lights located above the top pair of rear super 900 LED's and will be provided with 7E flange Kit
  - The color of these lights shall be red Super LED/red lens

The following lights shall be provided at the front and rear side upper corners of the side sheet facing the side of the truck (Upper zone B and D):

- Two 9 x 7 super LED lights and will be provided with a flange
- These lights shall be:
  - Red Super LED/red lens each side
  - Red Super LED/red lens each side

Per NFPA, the lights shall be switched on by a lighted switch on the instrument panel and all lights will be active whenever the switch is on.

The rear warning lights shall be mounted on stainless steel brackets with all wiring totally enclosed. These brackets shall also support the clearance/marker lights.

ELECTRICAL SYSTEM GENERAL DESIGN for ALTERNATING CURRENT

The following guidelines shall apply to the 120/240 VAC system installation:

General

Any fixed line voltage power source producing alternating current (ac) line voltage shall produce electric power at 60 cycles plus or minus five cycles.

Except where superseded by the requirements of NFPA 1901, all components, equipment and installation procedures shall conform to NFPA 70, National Electrical Code (herein referred to as the NEC).

Line voltage electrical system equipment and materials included on the apparatus shall be listed and installed in accordance with the manufacturer's instructions. All products shall be used only in the manner for which they have been listed.

Grounding

Grounding shall be in accordance with Section 250-6 "Portable and Vehicle Mounted Generators" of the NEC. Ungrounded systems shall not be used. Only stranded or braided copper conductors shall be used for grounding and bonding.

An equipment grounding means shall be provided in accordance with Section 250-91 (Grounding Conductor Material) of the NEC.

The grounded current carrying conductor (neutral) shall be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray in accordance with Section 200-6 (Means of Identifying Grounding Conductors) of the NEC.

In addition to the bonding required for the low voltage return current, each body and driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor. This conductor shall have a minimum amperage rating of 115 percent of the nameplate current rating of the power source specification label as defined in Section 310-15 (amp capacities) of the NEC. A single conductor properly sized to meet the low voltage and line voltage requirements shall be permitted to be used.

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.

Operation

Instructions that provide the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

Provisions shall be made for quickly and easily placing the power source into operation. The control shall be marked to indicate when it is correctly positioned for power source operation. Any control device used in the drive train shall be equipped with a means to prevent the unintentional movement of the control device from its set position.

A power source specification label shall be permanently attached to the apparatus near the operator's control station. The label shall provide the operator with the information detailed in Figure 19-4.10.

Direct drive (PTO) and portable generator installations shall comply with Article 445 (Generators) of the NEC.

Overcurrent protection

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 144 inches. (3658 mm) in length.

For fixed power supplies, all conductors in the power supply assembly shall be type THHW, THW, or use stranded conductors enclosed in nonmetallic liquid tight flexible conduit rated for a minimum of 194 degrees Fahrenheit (90 degrees Celsius).

For portable power supplies, conductors located between the power source and the line side of the main overcurrent protection device shall be type SO or type SEO with suffix WA flexible cord rated for 600-volts at 194 degrees Fahrenheit (90 degrees Celsius).

Wiring Methods

Fixed wiring systems shall be limited to the following:

- Metallic or nonmetallic liquid tight flexible conduit rated at not less than 194 degrees Fahrenheit (90 degrees Celsius)

  Or
- Type SO or Type SEO cord with a WA suffix, rated at 600 volts at not less than 194 degrees Fahrenheit (90 degree Celsius).

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring. In addition the wiring shall be run as follows:

- Separated by a minimum of 12 inches (305 mm), or properly shielded, from exhaust piping
- Separated from fuel lines by a minimum of six inches (152 mm) distance.

Electrical cord or conduit shall be supported within six inches (152 mm) of any junction box and at a minimum of every 24 inches (610 mm) of continuous run. Supports shall be made of nonmetallic materials or corrosion protected metal. All supports shall be of a design that does not cut or abrade the conduit or cable and shall be mechanically fastened to the vehicle.

Wiring Identification

All line voltage conductors located in the main panel board shall be individually and permanently identified. The identification shall reference the wiring schematic or indicate the final termination point. When pre wiring for future power sources or devices, the un-terminated ends shall be labeled showing function and wire size.

Wet Locations

All wet location receptacle outlets and inlet devices, including those on hardwired remote power distribution boxes, shall be of the grounding type provided with a wet location cover and installed in accordance with Section 210-7 "Receptacles and Cord Connections" of the NEC.

All receptacles located in a wet location shall be not less than 24 inches (610 mm) from the ground. Receptacles on off-road vehicles shall be a minimum of 30 inches (762 mm) from the ground.

The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical. No receptacle shall be installed in a face up position.

Dry Locations

All receptacles located in a dry location shall be of the grounding type. Receptacles shall be not less than 30 inches (762 mm) above the interior floor height.

All receptacles shall be marked with the type of line voltage (120-volts or 240-volts) and the current rating in amps. If the receptacles are direct current, or other than single phase, they shall be so marked.

Listing

All receptacles and electrical inlet devices shall be listed to UL 498, Standard for Safety Attachment Plugs and Receptacles, or other appropriate performance standards. Receptacles used for direct current voltages shall be rated for the appropriate service.

Electrical System Testing

The wiring and associated equipment shall be tested by the apparatus manufacturer or the installer of the line voltage system.

The wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900-volts for one minute. The test shall be conducted between live parts and the neutral conductor, and between live parts and the vehicle frame with any switches in the circuit(s) closed. This test shall be conducted after all body work has been completed.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

Operational Test per NFPA 1901 Chapter 19-14.4

The apparatus manufacturer shall perform the following operation test and shall certify that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order.

The prime mover shall be started from a cold start condition and the line voltage electrical system loaded to 100 percent of the nameplate rating.

The power source shall be operated at 100 percent of its nameplate voltage for a minimum of two hours unless the system meets category certification as defined in NFPA 1901 chapter 19-14.5.

Where the line voltage power is derived from the vehicle's low voltage system, the minimum continuous electrical load as defined in NFPA 1901 Chapter 9 shall be applied to the low voltage electrical system during the operational test.

GENERATOR

The apparatus shall be equipped with a complete electrical power system. The generator shall be a 20.0 kW Hydraulic unit. The wiring and generator installation shall conform to the present National Electrical Codes Standards of the National Fire Protection Association. The installation shall be designed for continuous operation without overheating and undue stress on components.

Generator Performance

- Continuous Duty Rating: 20,000 watts
- Nominal Volts: 120/240
- Amperage: 167 @ 120 volts, 83 @ 240 volts
- Phase: Single
- Cycles: 60 hertz
- Engine Speed at Engagement: Idle
- RPM range: 900 to 3,000 (hydraulic pump)

Generator Dimensions

- Length: 35 inches
- Width: 23 inches
- Height: 19.00 inches
- Weight: 472 pounds

The output of the generator shall be controlled by an internal hydraulic system. An electrical instrument gauge panel shall be provided for the operator to monitor and control all electrical operations and output.

The generator shall be driven by a transmission power take off unit, through a hydraulic pump and motor.

The generator shall include an electrical control inside the cab. The hydraulic engagement supply shall be operational at any time (no interlocks).

An electric/hydraulic valve shall supply hydraulic fluid to the clutch engagement unit provided on the chassis PTO drive.

Generator Instruments and Controls

To properly monitor the generator performance a digital meter panel shall be furnished and mounted next to the circuit breaker panel. The meter shall indicate the following items:

- Voltage
- Amperage for both lines
- Frequency
- Generator run hours
- Over current indication
- Over temperature indication
- "Power On" indication
- Two fuse holders with two amp fuses (for indicator light protection)

The meter and indicators shall be installed near eye level in the compartment. Instruments shall be flush mounted in an appropriate sized weatherproof electrical enclosure. All instruments used shall be accurate within +/- two percent.

Generator Wiring:

The system shall be installed by highly qualified electrical technicians to assure the required level of

safety and protection to the fire apparatus operators. The wiring, electrical fixtures and components shall be to the highest industry quality standards available on the domestic market. The equipment shall be the type as designed for mobile type installations subject to vibration, moisture and severe continuous usage. The following electrical components shall be the minimum acceptable quality standards for this apparatus:

Wiring:
All electrical wiring shall be fine stranded copper type. The wire shall be sized to the load and circuit breaker rating; ten gauge on 30 amp circuits, 12 gauge on 20 amp circuits and 14 gauge on 15 amp circuits. The cable shall be run in corner areas and extruded aluminum pathways built into the body for easy access.
Load Center:
The main load center shall be a provided with circuit breakers rated to load demand.

Circuit Breakers:
Individual breakers shall be provided for all on-line equipment to isolate a tripped breaker from affecting any other on-line equipment.

GENERATOR LOCATION
The generator shall be mounted in the cargo area at the front of the body in Carga area above pump house. The flooring in this area shall be either reinforced or constructed, in such a manner, that it shall handle the additional weight of the generator.

GENERATOR START
A switch shall be located on the cab instrument panel to engage the generator.

CIRCUIT BREAKER PANEL
The circuit breaker panel shall be located in the front wall of the driver's side forward brass compartment.

120 VOLT LIGHTING
A light shall be recessed in a cast aluminum housing.

The light fixture shall be a single 750 watt, 120 volt unit that draws 6.3 amps.

There shall be Four provided.

Total of four lights, two on each upper side sheet, mounted inboard of side upper warning lights to the front and to the rear.

240 VOLT LIGHTING
A side mount, bottom raise HIR flood light shall be provided.

The telescoping pole shall be as long as is practical to fit in the location it is mounted.

The light shall be connected to the "Do Not Move Truck" indicator in the cab.

The light fixture shall be a single 900 watt, 240 volt halogen infrared lamp head that draws 3.8 amps. The light shall provide a minimum of 32,000 lumens.

The lamp head shall swivel 360 degrees left or right and tilt up and down. All wiring used up to the junction box shall be a minimum of 14 gauge 3 wire cable that is properly supported and protected from damage.

A total of two shall be provided Rear of cab wall, one on each side..

15 AMP RECEPTACLE

Wired to the power supply shall be two receptacles that are 120 volt 15 amp three wire twist-lock NEMA L5-15 type with weather resisting cover location has yet to be determined.

LOOSE EQUIPMENT

The following equipment shall be furnished with the completed unit:

- One bag of chrome, stainless steel, or cadmium plated screws, nuts, bolts and washers, as used in the construction of the unit
- Soft suction hose provided by the Fire Department that meets required NFPA specifications as outlined under the general requirements of Chapters 5 - 12 at time of contract execution.

PAINT

The exterior custom cab and body painting procedure shall consist of a six step finishing process as follows:

1. Manual Surface Preparation - All exposed metal surfaces on the custom cab and body shall be thoroughly cleaned and prepared for painting. Surfaces that shall not be painted include all chrome plated, polished stainless steel, anodized aluminum and bright aluminum tread-plate. Each imperfection on the exterior metal surface shall be removed or filled and then sanded smooth for a smooth appearance. All seams shall be sealed before painting.

2. Chemical Cleaning and Treatment - The metal surfaces shall be properly cleaned using a high pressure and high temperature acid etching system. Surfaces are chemically cleaned to remove all dirt, oil, grease and metal oxides to ensure the subsequent coatings bond well. An ultra pure water final rinse shall be applied to all metal surfaces, excluding undercarriage components, at the conclusion of the metal treatment process.

3. Primer/Surfacer Coats - A two component urethane primer/surfacer shall be hand applied to the chemically treated metal surfaces to provide a strong corrosion protective base coat and to smooth out the surface.

4. Hand Sanding - The primer/surfacer coat shall be lightly sanded to an ultra smooth finish.

5. Sealer Primer Coat - A two component sealer primer coat shall be applied over the sanded primer.

6. Topcoat Paint - Two coats of an automotive grade, two component acrylic urethane paint, shall also be applied.

All removable items such as brackets, compartment doors, door hinges, trim, etc. shall be removed and painted separately to insure paint behind all mounted items. Body assemblies that cannot be finish painted after assembly shall be finish painted before assembly.

The cab shall be two-tone, with the upper section painted along with a shield design on the cab face and lower section of the cab and body painted .

PAINT - ENVIRONMENTAL IMPACT

Contractor shall meet or exceed all current State (his) regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water and soil. Controls shall include the following conditions:

- Topcoats and primers shall be chrome and lead free
- Metal treatment chemicals shall be chrome free. The wastewater generated in the metal treatment process shall be treated on-site to remove any other heavy metals
- Particulate emission collection from sanding operations shall have a 99.99% efficiency factor
- Particulate emissions from painting operations shall be collected by a dry filter or water wash process. If the dry filter means is used, it shall have an efficiency rating of 98.00%. Water wash systems shall be 99.97% efficient
- Water from water wash booths shall be reused. Solids shall be removed mechanically on a continual basis to keep the water clean
- Paint wastes are disposed of in an environmentally safe manner. They are used as fuel in kilns used in the cement manufacturing process - thereby extracting energy from a waste material
- Empty metal paint containers shall be cleaned, crushed and recycled to recover the metal
- Solvents used in cleanup operations shall be collected, sent off-site for distillation and returned for reuse. Residue from the distillation operation shall be used as fuel in off-site cement kilns.

Additionally, the finished apparatus shall not be manufactured with or contain products that have ozone depleting substances. Contractor shall, upon demand, present evidence that his manufacturing facility meets the above conditions and that it is in compliance with his State EPA rules and regulations.

PAINT CHASSIS FRAME ASSEMBLY

The chassis frame assembly shall be painted black before the installation of the cab and body, and before installation of the engine and transmission assembly, air brake lines, electrical wire harnesses, etc. Components that are included with the chassis frame assembly that shall be painted black are frame rails, cross members, axles, suspension, steering gear, fuel tank, body substructure supports, miscellaneous mounting brackets, etc.

WARRANTY - PAINT AND CORROSION
The cab and body exterior paint finish shall be warranted against blistering, peeling, corrosion, lack of adhesion or any other manufacturing or material defect for a period of **ten years**.

The cab and body shall also be warranted against corrosion perforation for a period of **ten years**.

A copy of the manufacturer's warranty shall be included with the bid.

COMPARTMENT INTERIOR FINISH
The interior of the body compartments shall be left unpainted and have the natural finish.

The reflective band provided on the cab face shall be below the headlights on the fiberglass.

JOG(S) IN REFLECTIVE BAND
The reflective band located on each side of the apparatus body shall contain one jog(s) and shall be angled at approximately a 45 degree "s" when installed.

REFLECTIVE STRIPE, CAB DOORS
A 6.00" x 16.00" white reflective stripe shall be provided across the interior of each cab door. The stripe will be located approximately 1.00" up from the bottom, on the door panel.

This stripe shall meet the NFPA 1901 requirement.

LETTERING
The lettering shall be totally encapsulated between two layers of clear vinyl.

LAMINATION WARRANTY
The manufacturer shall provide a **three year** warranty against defects in material and workmanship with the graphics process. A copy of the fire apparatus manufacturer's warranty shall be included with the bid.

LETTERING
Sixty-one to eighty genuine gold leaf lettering, 3.00" high, outlining and shading shall be provided.

LETTERING/NUMERALS ON CAB GRILLE
Two painted letters/numerals, as determined by the fire department, shall be provided on the cab grille.

REFLECTIVE LETTERING
Twenty-eight letters, 8.00" high reflective letter(s) with outline and shading shall be installed on Upper Body Panel between upper warning lights and scene lights..

REFLECTIVE LETTERING
Twenty letters, 3.00" high reflective letter/s shall be provided on Rear Roll up Door.

DECAL INSTALLATION

There shall be two pair of decals furnished by the fire department and applied by the apparatus manufacturer.

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

Rescue 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 of 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 contrendre.*

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 faca 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.)