

Town of Fairfield

Fire Pumper Specifications

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CHAPTER 1 –General Information

1.1 WARRANTIES

The following warranties and warranty periods shall be considered as the minimum acceptable to the Town of Fairfield (Town). Warranties shall begin on the in-service date.

Warranty	Time Limit
A. Chassis Frame Rails	Lifetime parts and labor.
B. Engine and Transmission	Five years parts and labor.
C. Front and Rear Axles	Five years parts and labor.
D. Fire Pump	Five years parts and labor.
E. Structural	Ten year on the cab and body
F. Corrosion Perforation	Ten year on the cab and body
G. Paint	Seven years on the cab and body

This vehicle shall incorporate a minimum five-year bumper-to-bumper warranty. The fire apparatus manufactured shall be free from defects in material and workmanship under normal use and service for a period of five (5) years from the in service date at the Fairfield Fire Department (FFD). Routine maintenance shall be the responsibility of the Fairfield Fire Department. Any warranty deductibles from component manufacturers shall be the responsibility of the apparatus bidder/builder during the warranty term.

1.2 INTENT OF SPECIFICATIONS

It is the intent of these specifications to cover the furnishing and delivery of a complete fire pumper apparatus equipped as hereinafter specified to the Town of Fairfield, Fire Department, 600 Jennings Road Fairfield CT. 06824. In order to obtain the best results and the most acceptable apparatus for service in the Town of Fairfield, Fire Department, these specifications cover only the general requirements as to the type of construction and tests to which the apparatus must conform. Together with certain details as to finish, equipment and appliances with which the successful bidder must conform, minor details of construction and materials, where not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features.

The latest National Fire Protection Association (NFPA) edition of the 1901 Standard for Automotive Fire Apparatus shall be used as a reference and, unless otherwise specified in these specifications, the bidder shall meet its requirements. Mandatory minor apparatus equipment as stated in the applicable paragraphs and respective subparagraphs of the NFPA Standard shall not be provided unless specifically stated and listed in purchaser's written specifications.

The apparatus must be built in the continental United States, no exception.

Bids shall only be considered by the Town of Fairfield from companies who have an established reputation in the field of fire apparatus construction.

1.3 RESPONSIBILITY OF THE BIDDER

Each bidder shall furnish satisfactory evidence of his/her ability to construct the apparatus specified and shall state the location of the factory or factories where the apparatus is to be manufactured. The bidder shall also show that he/she is in a position to render prompt service and to furnish replacement parts for said apparatus.

Each bid shall be accompanied by a "Contractor's Proposal" consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under contract shall conform. The bidder's proposal shall be in the same order as the specifications so that it may be easily compared and checked for compliance. "Manufacturer's Specifications" shall include size, type, model and make of all parts, components and equipment. Bid proposals not complying with this requirement may be rejected.

The total price on the bidder's proposal sheet must include all items in the purchaser's specifications.

The bidder, if his/her bid is accepted, shall defend any and all suits and assume all liability for the use of any patented process, device or article forming a part of the apparatus or any appliance furnished under the contract.

Successful bidder will be responsible for mounting all equipment in and on the truck as needed by the Fire Department.

1.4 RESPONSIBILITY OF PURCHASER

The Town of Fairfield, Purchasing Authority, reserves the right to make its award based on best value which may include life-cycle cost analysis. All bids shall be evaluated on the basis of compliance with these specifications and apparatus performance. Furthermore, the Town of Fairfield reserves the right to reject any bids not in compliance with these specifications.

1.5 QUALITY AND WORKMANSHIP

The workmanship must be of the highest quality in its respective field. Special consideration shall be given to the following points:

- Accessibility of the various components which require periodic maintenance
- Ease of operation (including both pumping and driving)
- Symmetrical proportions

Construction must be rugged and safety factors must be provided to carry loads as specified. Construction must also 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 and for repair.

1.6 GENERAL CONSTRUCTION

The apparatus proposed may not be a prototype and there must be an apparatus of similar design in the United States. A list of other purchasers must be listed on a separate form supplied by the bidder.

The apparatus must be designed and the equipment mounted with due consideration to distribution of load between the front and rear axles, so that all specified equipment, including a filled water tank, full complement of personnel and fire hoses shall be carried without damage to the apparatus. Weight balance and distribution must be in accordance with the recommendations of the NFPA and current standard automotive practices.

The chassis must be a new, heavy-duty, custom fire apparatus design, built expressly for the fire service. All standard components, which have not been specified, must be provided.

The chassis must be suitable for heavy-duty service with all components having adequate strength and capacity for the intended load to be sustained and the type of service required.

Within these categories the following specific items must be included:

- Wheelbase Shall be a maximum of 178"
- Maximum overall length must not exceed 29' 7" (355").
- Maximum overall pumper body height 102", rear lights, suction hose, and ladder brackets 107", and tip of the vertical exhaust stack 116".
- Entire cab must tilt.
- Seating capacity must be provided for four (4) personnel (including driver).
- Rear axle gearing must allow a maximum top speed of 50 - 53 miles per hour in 4th gear direct and 68 miles an hour in fifth (5th) gear overdrive (mode function).
- GVW rating must be a minimum of 42,000 lbs.
- The cab must be constructed of aluminum or stainless steel.
- The pumper body and its substructure shall be constructed of stainless steel.
- Use of self-tapping fasteners or any type of rivet will not be allowed or accepted on any door panels, headliner, or wheel well liners. (Extruded U-nuts or nutserts are acceptable).

The following requirements must be strictly adhered to:

- A. Exceptions will be allowed if they are equal to or superior to that specified. Exceptions will also be allowed provided they are listed and fully documented and explained on a separate page entitled "Exceptions to Specifications". The exception list must refer to the specification page number and paragraph.
- B. The Town of Fairfield must approve all exceptions or deviations in writing.
- C. Proposals must list all exceptions to the specification.
- D. The apparatus must be inspected upon delivery for compliance with specifications.
- E. Deviations will not be allowed and may be cause for rejection of the apparatus unless they were originally listed in bidder's proposal.

1.7 ELECTRICAL WIRING

The apparatus shall have the ability to function in an electromagnetic environment most common to fire ground operations. The electrical system shall be designed for full compatibility with low-level control frequencies and any high-powered two-way radio systems.

Circuit breakers or fuses shall protect all wiring. Circuit breakers shall be the automatic reset type unless operational requirements and/or safety concerns dictate manual reset type. Automotive type fuses shall be used when required to protect delicate electronic equipment. All circuit protection devices shall conform to the Society of Automotive Engineers (SAE) standards. All circuit protection devices shall be sized according to 125% of the anticipated load to prevent any wire and/or component damage when subjected to extreme current overload.

All apparatus builder supplied wiring (excluding battery cables) shall be GXL high temperature (250 degrees minimum) type, color and number coded and imprinted with circuit function every two (2) inches (no exception). Wiring connectors shall be the crimp type with plastic sleeve or shrink tube insulation covering the crimped area to prevent accidental grounding. In-line connectors shall also utilize shrink tubing for a weatherproof connection.

All externally exposed, non-plug type, electrical connections shall be given a hand applied or sprayed application of an industrial standard insulation coating with a minimum rating of 2100 volts per mil thickness.

Insulation shall protect the connection from water induced electrical corrosion and accidental short-circuiting. Should the connection be loosened or removed during the manufacturing process another coating shall be applied after it has been refastened or replaced.

Any electrical component or device installed in an exposed area on the outside of the cab or body shall be mounted in such a manner, or protected by a gasket, caulking or other means, so that moisture will not accumulate in it.

All exposed electrical wiring shall be run in an automotive type split plastic conduit or woven fabric type loom and shall have rubber grommets installed wherever the harness passes through any sheet metal panels.

An operational test shall be conducted to ensure that all installed electrical equipment is properly connected and is in working order. Additionally all warning lights shall be run continuously during the three (3) hour NFPA pump certification test (or at another time for not less than three (3) hours).

1.8 PERFORMANCE TEST AND REQUIREMENTS

A road test shall be conducted by the Fire Department at the manufacturers facility with the apparatus loaded per NFPA recommendations (unless otherwise specified) and a continuous run of (10) miles or more shall be made 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. The apparatus when loaded shall have not less than 25% nor more than 45% of the weight on the front axle and not less than 55% nor more than 75% on the rear axle. The successful bidder shall furnish a weight certificate showing weights on front axle, rear axle and total weight for the completed apparatus at time of delivery, with water tank full, but without personnel, equipment and hose.

NOTE: The apparatus shall be tested and approved in accordance with NFPA standard practices, and must comply within NFPA guidelines.

1.9 FAILURE TO MEET TEST

In the event that the apparatus fails to meet the test requirements of these specifications during the first set of trials, a second set of trials may be made at the option of the bidder within 30 days of the date of the first trials. Such trials shall be final and conclusive. Failure to comply with these requirements shall be cause for rejection. Permission from the manufacturer to keep or store the apparatus in any building owned or occupied by the Town of Fairfield, or its use by the Fairfield Fire Department during the above-specified period, shall not constitute acceptance.

1.10 DELIVERY

The fire apparatus shall be delivered over the road and under its own power to insure proper break-in of all driving components while still under warranty. Delivery shall be made by the manufacturer's representative, who shall employ a factory trained and certified field technician to drive the truck to the in-service location and provide training for the fire department emergency vehicle technicians.

Note: The manufacturer may be assessed with charges for liquidated damages for additional expenses or financial losses incurred by the Town of Fairfield, if the delivery date is exceeded.

1.11 TRAINING

The manufacturer shall provide a factory trained and certified field service technician to train the members of the Fairfield Fire Department apparatus maintenance division in the use and maintenance of the vehicle for a period of no less than one (1) full working day prior to training suppression personnel.

The factory trained and certified field service technician shall then be available for no less than 32 hours over a four (4) day training period, for all Fairfield Fire Department personnel.

NOTE: These four (4) days may not be consecutive and will be scheduled at the discretion of the Fairfield Fire Department training division, so that all four (4) shifts will receive orientation.

1.12 OPERATION MANUALS

The manufacturer must supply a minimum of seven (7) complete operation manuals covering the completed apparatus as delivered.

Operation manuals must include instruction booklets describing function, control and service procedures from all manufacturers. Separate pump manufacturer's manuals must be provided.

1.13 PARTS MANUALS

Two (2) parts manuals must also be provided for the vehicle as built, which must include an overall (five-view) vehicle layout, to assist in spare parts selection and identification. Manuals must be supplied on hard copy book and compact disc format.

Parts manuals must be keyed to manufacturer's bill of materials code system for ease of locating replacement parts. If available, expanded drawings shall be provided to assist in the identification of parts.

1.14 SERVICE & WIRING MANUALS

Two (2) 'as built' service and wiring manuals must be provided for the vehicle on hard copy book and compact disc format.

1.15 ENGINEERING DRAWINGS

Drawings will be an interpretation of the unit as it is to be supplied. The scaled drawings submitted with the bid shall include the following:

- Overall height
- Sizes of all compartments, width, height, and depth (interior dimension & door opening dimension)
- Overhang front and rear
- Wheelbase and Overall length
- Overall width of apparatus
- Angle of departure and approach

Drawings must show, but are not limited to, such items as the chassis being proposed, warning lights, D.O.T. lights, horns, siren, and all compartment locations and dimensions.

1.16 APPROVAL DRAWINGS

Two (2) sets of engineering blueprints, specifically for the proposed apparatus, must be provided by the manufacturer and be approved by the Town of Fairfield before construction begins. Both the Town of Fairfield and the Manufacturer's Representative must have a copy of this drawing. It will become part of the total contract. These drawings should be drawn to scale on a CAD system to assure an accurate and professional drawing. The drawing must show five (5) views of the vehicle (front, rear, both sides and top). The blueprints must show the overall dimensions of the apparatus, proposed compartment sizes and features, booster tank position and the location of all emergency warning and work lights that are to be provided on the apparatus.

Two (2) sets of drawings of the pump panel layout showing the placement of all controls, gauges intakes and discharges must be provided and subject to Town of Fairfield approval prior to beginning of construction.

The Town of Fairfield prior to any metal being sheared or cut for the unit must approve the final drawings.

The Town of Fairfield, the manufacturer's representative and the apparatus manufacturer must have a copy of the drawings, which will become part of the final contract.

1.17 CONSTRUCTION CONFERENCE AND FINAL INSPECTION

A pre-construction conference will be arranged and conducted at the manufacturer's factory, prior to any metal being cut. The Town of Fairfield will organize their own travel arrangements and lodging, including expenses.

A final construction inspection at the manufacturer's factory is also to be provided for two (2) Fire Department personnel. The Town of Fairfield will organize their own travel arrangements and lodging, including expenses.

1.18 SERVICE CENTER AND PARTS DEPOT

Each bidder must document that they currently maintain an established service center and parts depot capable of satisfying the warranty service requirements and parts requirements for the apparatus proposed.

The bidder must state the location of the authorized service center and the number of factory trained EVT / ASE certified technicians who are well versed in all aspects of service for all major components of the proposed apparatus.

The Service Center shall operate a 24 hour road service unit equipped with service parts and tools to perform emergency and warranty repairs.

CHAPTER 2 –Chassis

2.1 FRAME

The frame shall consist of double channel side rails and cross members forming a ladder style frame. The sides of the rails shall be formed in the shape of a "C" channel, 10.25 inches high X 3.50 inches deep upper and lower flanges X .38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and .38 inches thick. The high strength low alloy steel shall have a Tensile Elastic Limit of 110,000 psi. Each double rail shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

Proposals calculating the frame strength using the "box method" shall not be considered.

Proposals including heat treated rails shall not be considered.

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The head bolts shall be flanged type with distorted threads, held in place by flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

Any proposals not including additional reinforcement for each cross member shall not be considered.

Frame rails shall be manufactured such that bolt attachment holes are specific for each component and shall not include any unnecessary holes.

All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

2.2 FRONT BUMPER

The chassis shall be equipped with a severe duty "FDNY" style front bumper constructed from structural steel channel. The bumper material shall be .38 inch thick ASTM A36 steel which shall measure 12.00 inches high with a 3.05 inch flange and shall be 101.00 inches wide with angled front corners.

Cut Outs for Recessed Warning Devices, layout shall be as follows:

Air Horn Trumpet's – One (1) each side of hose tray

Whelen Electronic Siren Speaker – Right side front (Officer's)

The bumper shall be primed and painted Job color.

2.3 18" BUMPER EXTENSION WITH CENTER HOSE WELL

A bumper extension must be provided with a center hose well. The front of the bumper must be located approximately 18" from the front face of the cab. The hose well must be of adequate size to hold a minimum of two (2) 50' lengths of double jacketed 1 3/4" attack hose and a TFT Break away Midmatic Nozzle; the bottom of the hose well must be no lower than the bottom of the bumper. It must be constructed of smooth aluminum (both sides) and be easily removable from gravel pan. It must be installed with recessed (countersunk) flathead screws to avoid tearing soft hose. The horizontal top-mounting flange must have mitered outside corners and its surface must be DA'ed. Drain holes must be provided.

2.4 FRONT TOW EYES (UPPER AND LOWER)

Two (2) painted "cut plate" type tow eyes must be furnished. They must be installed through the top of the aluminum tread plate gravel pan, directly behind the bumper, and extend down below the frame with two (2) lower tow eyes, securely attached (bolted) to the bumper extension frame. The eyes must be fabricated of a minimum of 3/4" thick steel plate with a 2-1/2" diameter opening. All edges shall be beveled.

2.5 BRAKE SYSTEM

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss.

Automatic traction control which shall be installed on the single rear axle. The automatic traction control system shall apply the anti-lock braking system when the drive wheels loose traction.

Additional handling capabilities shall include roll stability control which shall monitor the vehicles rollover threshold based on the lateral acceleration. The system shall activate a computerized device which shall slow the vehicle when the threshold is exceeded in either direction. Normal vehicle operation shall resume once the problematic conditions cease. Roll stability control shall be integral with the ABS and ATC systems.

A momentary rocker style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light and the light on the rocker switch shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

The apparatus shall be equipped with an Electronic Stability Control (ESC) unit.

2.6 ANTI-LOCK BRAKES (ABS)

The braking system must be provided with the MERITOR-WABCO (formerly Rockwell) four (4) channel anti-lock braking system (ABS) to assist in providing safe stopping without wheel lockup.

The electronic system must monitor and control wheel speed during braking. The ABS system must be divided in two (2) circuits or diagonals to control specific areas of the vehicle. Diagonal 1 must control the right front and the left rear wheels. Diagonal 2 must control the left front and the right rear wheels.

If a fault occurs in one (1) diagonal, the other diagonal must continue to provide the ABS function. If the ABS system should fail completely, the brake control must return to normal (non-ABS) braking.

An ABS warning light must be installed under the driver's dash. This warning light must cycle through a test stage at the point of ignition turn on and remain illuminated until the vehicle reaches approximately four MPH. The light must illuminate in other conditions to warn of an ABS system failure.

2.7 AIR SUPPLY LINES

A dual air system plumbed with color coded reinforced nylon tubing air lines shall be installed on the chassis. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) shall be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

2.8 AIR HORN SHUTOFF VALVE

A shut-off valve located in the driver's dash shall be installed in the air horn supply line.

2.9 AIR COMPRESSOR

To be determined by the engine manufacturer, with a minimum of 18 cfm.

2.10 BENDIX AIR DRYER & PURAGAURD FILTER

A Bendix Model AD-IP "Drop In" version air dryer and a Bendix puragaurd QC filter shall be supplied and installed. The system must include a pressure controlled check valve installed between the wet tank and the secondary air reservoirs. Special attention shall be given to the installation and mounting of the air dryer assembly to ensure ease of serviceability.

2.11 AUXILIARY AIR INLET

An auxiliary 1/4" NPT "P" style male coupler Milton # s1809 air inlet shall be supplied and installed. The inlet must be located in the driver side lower step well of the cab. A check valve must be provided to prevent a reverse flow of air. The inlet must discharge into the wet tank of the brake system.

2.12 INTERLUBE AUTOMATIC LUBE SYSTEM

An Interlube Model AC3, 24 point automatic lubrication system shall be provided. The Interlube system shall be supplied and installed by Lubrication Technologies, West Springfield, MA.

The wear points to which the ALS is connected to must include but not be limited to the following:

- Pivots for the cab tilt
- Steering box and sub box
- King pins
- Tie rods
- Pitman arm
- Drag link
- Front and rear spring hanger pins

2.13 FRONT AXLE

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20 equipped with Meritor EX-225 air disc brakes. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle.

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs. The chassis shall have a front axle cramp angle of 48 degrees to the left and 44 degrees to the right.

2.14 FRONT SHOCK ABSORBERS

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam.

2.15 FRONT SUSPENSION

The front suspension shall include four (4), 54.00 inch long and 4.00 inch wide taper leaf springs with a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 20,000 pounds.

2.16 FRONT TIRES

The front tires shall be Goodyear G289 WHA 315/80R-22.5 20 "L" tubeless radial highway tread.

2.17 ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

2.18 REAR AXLE

The rear axle shall be a Meritor Model RS-23-186 equipped with Meritor EX-225 air disc brakes. The single reduction differential must have a ratio to allow a maximum top speed of 50 - 53 mph in 4th gear direct. And a top speed of 68 mph in 5th gear overdrive (mode).

The rear axle shall be equipped ATC (automatic traction control).

2.19 REAR SUSPENSION

The single rear axle shall feature a Reyco 79KB vari-rate, self-leveling captive slipper type conventional spring suspension, with 57.50 inch X 3.00 inch springs. One (1) adjustable and one (1) fixed torque rod shall be provided.

The rear suspension capacity shall be rated from 21,000 to 31,500 pounds.

2.20 REAR TIRES

The rear tires shall be Goodyear G 622 RSD 12R-22.5 "H" tubeless radial traction tread.

2.21 ALCOA WHEELS

All six (6) wheels must be Alcoa XBR Dura-Bright aluminum hub piloted disc type.

2.22 WHEEL TRIM

The front wheels shall include stainless steel lug nut covers and stainless steel 'baby moons' with cutouts for oil level viewing.

The lug nut covers and baby moons shall be RealWheels® brand, and constructed of 304L grade, non-corrosive stainless steel meeting D.O.T. certification standards.

Note: Rear Wheel Hubs shall be painted job color red.

2.23 TIRE PRESSURE EQUALIZATION SYSTEM (REAR):

There shall be a voucher provided with the chassis for Crossfire dual tire equalization system provided on both sets of dual tires on the rear axle. This shall bolt easily to the drive axle end allowing air to flow freely from one (1) tire to the other, maintaining equal tire pressure and load distribution.

The Crossfire dual tire equalization system shall be redeemed upon the vehicle manufacture's receipt of the voucher along with the vehicle in-service weight for each axle.

2.24 TIRE PRESSURE INDICATOR (FRONT):

There shall be a voucher provided with the chassis for a dial style tire pressure indicator at the front tire valve stem. The indicator shall provide visual indication of pressure in the specific tire.

The tire pressure indicators shall be redeemed upon the vehicle manufacturer's receipt of the voucher for installation by the customer.

2.25 CHASSIS ALIGNMENT

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

The completed apparatus shall be rechecked for proper alignment once the chassis has been fully loaded and before being placed in service.

2.26 "ONSPOT" AUTOMATIC SNOW CHAINS

"Onspot" automatic snow chains Model # 04021BC must be supplied and installed on the rear axle of the vehicle. An electric switch must be mounted in the cab to provide 12 volts to an air solenoid mounted on the vehicles frame. Compressed air to the solenoid from the vehicle's onboard air system must activate the chains. The chains must be mounted to "Onspot" specifications. The "Onspot" automatic snow chain activation switch must be mounted in clear view and easily accessed from the driver's position.

No exceptions to this model will be allowed.

2.27 ENGINE

A Cummins ISL9-450 (450 H.P. 1250 LB-FT Peak Torque) engine and compression brake shall be provided. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine compression brake shall activate upon 0% accelerator when in operation mode and actuate the vehicle's brake lights.

The engine shall utilize a variable geometry turbo (VGT) as an integrated auxiliary engine brake to offer a variable rate of exhaust flow, which when activated in conjunction with the compression brake shall enhance the engine's compression braking capabilities.

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The compression brake shall be controlled through an on/off switch and a low/medium/high selector switch.

Both the compression brake and coolant filter with (SCA) shall be provided by the engine manufacturer.

2.28 SILICONE HOSES

All hoses in the cooling system including the heater hoses must be silicone type with stainless steel constant torque Oetiker clamps.

2.29 MOBIL DELVAC ENGINE COOLANT

The cooling package shall include Mobil Delvac extended Life Coolant (ELC). The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees F.

2.30 ELECTRONIC COOLANT LEVEL INDICATOR

The instrument panel shall feature a low engine coolant indicator light that shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

2.31 ENGINE PUMP HEAT EXCHANGER

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant.

2.32 ENGINE HEATER

A 110-volt, 1000-Watt Kim Hot start, direct immersion block heater with thermostat control shall be provided with AC electrical inlet (shoreline) connection.

The block heater must be hard wired to the auto eject.

2.33 HEATER SHUTOFF VALVES

Manual shutoff valves shall be provided at the engine for the supply lines running to all of the cab heaters.

2.34 DIESEL PARTICULATE FILTER CONTROLS

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

2.35 ENGINE HIGH IDLE CONTROL

The vehicle shall be equipped with an automatic high-idle speed control. It shall be pre-set so when activated, it shall operate the engine at 1000 RPM to increase alternator output. This device shall operate only when the master switch is activated and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, releases the parking brake or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake is released, parking brake activated or when the transmission is placed in neutral.

A manual switch shall be located in the cab for the driver and at the left pump panel for the operator.

2.36 TRANSMISSION

The drive train shall include an Allison Gen IV-E model EVS 3000 torque converting, automatic transmission that shall include electronic controls and an output retarder. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The Gen IV-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

2.37 TRANSMISSION MODE PROGRAMMING

The transmission, upon start-up, shall automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.

2.38 ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

2.39 TRANSMISSION SHIFT SELECTOR

An Allison pressure sensitive range selector touch pad shall be provided and located to the upper right of the driver within clear view and easy reach. The shift selector shall provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators.

2.40 TRANSMISSION RETARDER CONTROL

The Allison transmission retarder control shall be modulated by one-third at 0% throttle and two-thirds of the brake pedal actuation and shall include a rocker switch mounted on the dash. A retarder system activation indicator light shall be provided on the dash to show when the system is enabled. The activation of the retarder shall activate the brake lights. The retarder shall be inactive during pump mode.

2.41 TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed.

2.42 TRANSMISSION COOLING SYSTEM

The transmission shall include an air to oil cooler integrated into the lower portion of cooling package. The transmission cooling system shall meet all transmission manufacturer requirements.

The transmission retarder application shall feature separate water to oil cooling system. The cooler shall be installed into the transmission hydraulic circuit providing cooling for the retarder. The tube bundle cooler shall be mounted to the chassis, connected to the engine cooling system plumbing.

2.43 TRANSMISSION WARRANTY

The Allison EVS series transmission shall be warranted for a minimum period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

2.44 DRIVELINE

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints. The shafts shall be dynamically balanced prior to installation. A splined slip joint shall be provided in each driveshaft and shall be coated with Glide coat®.

2.45 FUEL FILTER/WATER SEPARATOR

The fuel system shall have a Fleetguard FS1003 fuel filter/water separator as a primary filter; the fuel filter shall have a drain valve, water in the fuel sensor, and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

A secondary fuel filter Fleetguard FF-5636 shall be included as approved by the engine manufacturer.

2.46 FUEL LINES

The fuel system lines shall be black textile braid covered high tensile steel reinforced wire braided supply and return hoses with steel reusable fittings installed from the tank to engine.

2.47 FUEL SHUTOFF VALVES

A fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.

A fuel line shutoff valve shall be provided near the fuel filter to prevent fuel from draining back while changing the fuel filters.

2.48 FUEL TANK

The fuel tank shall have a minimum capacity of sixty-eight (68) gallons. The baffled tank shall be made of 14-gauge stainless steel.

The fuel tank shall be mounted approximately two (2) inches below the frame behind the rear axle with stainless steel straps, so that it can be easily lowered and removed for service purposes.

The tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

Dual draw tubes and dual sender ports shall be installed. Two (2) 2.00 inch NPT fill ports shall be available for right or left hand fill. A 0.5 inch NPT drain plug shall be centered in the bottom of the tank.

2.49 FUEL TANK FILL PORT

The fuel tank fill ports shall be even with the right and left fill port located in the middle position of the fuel tank.

2.50 FUEL TANK SERVICEABILITY PROVISIONS

The chassis fuel lines shall have additional length provided so the tank can be easily lowered and removed for service purposes.

The fuel tank pickup tube and sending unit shall be REMOVABLE without having to remove the fuel tank; a removable panel in the rear body compartment shall allow access to the fuel tank and sender unit.

2.51 AIR RESTRICTION INDICATOR

A Donaldson mechanical engine air filter restriction indicator shall be provided and installed in the cab in a location that can easily be viewed by the driver.

2.52 ENGINE EXHAUST SYSTEM

The system shall utilize 0.065 inch thick stainless steel exhaust tubing between the engine turbo and the diesel particulate filter. This section of the exhaust system shall be wrapped with a thermal cover in order to retain the necessary heat for system regeneration, with zero leak clamps to seal all system joints between the turbo and diesel particulate filter.

From the diesel particulate filter to the end of the stack the system shall be plumbed with 0.065 inch thick aluminized steel tubing connected with overlapping band style clamps.

The exhaust shall be 5" diameter at the tip and shall be mounted vertically in the right side pump compartment just to the front of the water tank. The stack shall be placed on the right side to Fairfield specifications.

The exhaust stack shall be 116" to the tip from the floor.

Heat shields shall be provided as needed to prevent damage to body and wiring from excessive exhaust temperatures.

2.53 ALTERNATOR

A minimum 340 amp Niehoff C619-1 alternator with a heavy-duty, externally mounted integral regulator shall be provided.

2.54 BATTERIES

Six (6) 12V Deka 1131 XMF Top Stud batteries shall be supplied. They shall be mounted three (3) each side of the cab in the rear entrance way.

Battery cables shall have energy saving, maintenance free top stud sealed connectors with removable protective caps. Covers shall provide corrosion and electrical short protection and environmental sealing. Connectors shall be color coded red for positive and black for negative battery studs. Traditional clamp type post connections will not be acceptable (no exception).

2.55 BATTERY BOXES

Battery compartments of stainless steel shall be located one (1) each side in the crew cab step wells. They shall be well ventilated and have removable covers. Covers shall completely enclose the battery compartment and lift up as a single unit. The battery compartments shall be fully enclosed to protect against road splash and debris. Suitable provision shall be provided for drainage of battery compartments.

Batteries shall be held firmly in place by providing a full frame type top clamp, which encloses the battery set on all four upper (corner) sides. This one-piece clamp shall be fabricated of 3/4" angles and be held in place by two (2) "J" shaped clamping bolts, which attach to the lower battery angle stops on the compartment floor.

The batteries shall be installed on a non-corrosive mat.

2.56 BATTERY JUMPER STUDS

The starting system shall include battery jumper studs with color coded covers. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

CHAPTER 3 –Cab

3.1 CAB STYLE

The cab shall be a custom, enclosed model, built specifically for the fire service by a company specializing in cab and chassis design for all fire service applications.

The cab shall be manufactured for heavy-duty service utilizing adequate strength and capacity for the application of protecting firefighters. The cab shall be of a modular design and be of aluminum extrusion construction.

The method of cab construction shall use a process incorporating techniques outlined in accordance with the American Welding Society D1.1-96 requirements for structural steel welding. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

The roof, the rear wall and side panels shall be assembled using proven industrial adhesives, designed specifically for aluminum fabrication.

All interior and exterior seams shall be sealed for optimum noise reduction.

The cab shall be constructed of 5052-H32 Marine Grade, one hundred percent (100%) primary aluminum plate. A single formed, one (1) piece extrusion, manufactured from 6061-T6 100 percent primary one-quarter inch thick aluminum shall be used for the “A” pillar adding strength and rigidity to the cab as well as additional roll-over protection. The cab side wall skins shall be 0.125 inch thick, the rear wall and roof skin shall be 0.19 inch thick, the front skin shall be 0.125 inch thick.

The cab shall incorporate tongue and groove fitted 6061-T6 0.25 inch thick aluminum extrusions for extreme duty situations. The cab shall include multi-layer composite insulation.

Proposals offering products built with anything less than the alloy-temper mentioned or any cabs utilizing recycled or recovered aluminum plate or extrusion products shall not be considered.

The cab shall incorporate a fully enclosed design with no partition between the front and rear sections of the cab. The walls of the vehicle shall include roof supports allowing for an open design. The outside dimension of the cab shall be a minimum of 96.00 inches wide with a minimum interior width of 90.00 inches.

The cab overall length shall be approximately 130.38 inches in length with 54.00 inches from the centerline of the front of the axle to the back of the cab. The cab shall offer a height of 58.00 inches from the front floor to the headliner and a rear floor to headliner height of 65.00 inches, at a minimum. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab door openings. The front door opening shall offer a clear door opening of a minimum of 43.00 inches wide X 56.00 inches high. The rear door opening shall offer a clear door opening of a minimum of 34.00 inches wide X 63.00 inches high. The cab shall also include a crew area for up to four (4) seating positions.

The cab shall incorporate a two (2) step configuration from the ground to the cab floor for each door opening. The lower step shall be constructed of heavy duty safety grating which meets or exceeds Federal Specification RRG-1602-latest revision.

3.1 CAB STYLE (CONTINUED):

The first step for the driver and officer area shall measure 11.44 inches deep X 31.13 inches wide. The intermediate step shall measure 8.75 inches deep X 33.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

The first step for the crew area shall measure 12.13 inches deep X 20.44 inches wide. The intermediate step shall measure 10.50 inches deep X 23.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.50 inches.

3.2 CAB FRONT FASCIA

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.090 of 1" inch thick, one hundred percent (100%) primary aluminum plate that shall be an integral part of the cab.

The cab fascia shall encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. A chrome plated molded plastic bezel shall be provided on each side around each set of four lamps.

3.3 FRONT GRILLE

The front cab fascia shall include a classic box style, 304 stainless steel front grille.

The upper portion of the grille shall be hinged at the bottom so it can be opened to allow easy access for examination of the windshield wiper motor, linkage and other options mounted within that area. The upper portion of the grille shall be secured with two (2) flush push button latches.

3.4 CAB WINDSHIELD

The cab windshield shall have a minimum surface area of 2884.00 square inches and be of a two (2) piece wraparound design.

The distance from the driver and officer to the windshield shall be a minimum of 42.00 inches at the furthest seated position.

The glass utilized for the windshield a standard automotive tint. The left and right windshield shall be fully interchangeable.

3.5 WINDSHIELD WIPER SYSTEM

The cab shall include a parallel arm wiper system that shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers affixed to a rod style arm. The system shall include a single motor to initiate the arm in which both the left hand and right hand windshield wipers are attached. The wiper motor shall be activated by an intermittent wiper control located within easy reach of the driver's position.

3.6 ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the indicator light on the instrument panel shall illuminate.

3.7 CAB ENTRY DOORS

The cab shall include a driver and officer area with two (2) cab door openings that offer a clear door opening minimum of 40.75 inches wide.

The doors shall be constructed of extruded aluminum with a nominal thickness of .125 inch. The exterior skins shall be constructed of .125 inch aluminum plate. The cab shall include four (4) entry doors as high as possible for ease of entering and egress when outfitted with an SCBA.

Any cab with front and crew doors manufactured of less than the material thickness of .125 inch in both the extrusion and exterior skin shall not be considered.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge.

All door hinges shall be hidden within flush mounted cab doors. Each hinge shall be .375 inch piano style and be constructed of stainless steel.

Proposals offering door hinge thickness any less than stated shall not be considered.

Proposals including doors that do not comply with the flush mounting as described or those including exposed hinges shall not be considered.

3.8 CAB ENTRY DOOR TYPE

All cab entry doors shall be barrier clear design resulting in exposed lower cab steps. The doors shall provide approximately 32.00 inches of clearance from the ground to the bottom of the door so cab doors may be opened un-hindered.

3.9 CAB DOOR FRAME SCUFF PLATES

A highly polished stainless steel scuff plate shall be installed on the striker side of each cab doorframe and shall run the full height of the door opening. The scuff plate shall be a single-bend configuration.

3.10 STEP TRIM

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of 14-gauge 304 stainless steel with indented perforations. The stainless steel material shall have a number 7 mirror finish. The lower step shall be mounted to a frame integral with the construction of the cab. The middle step shall be integral with the cab construction and shall be trimmed in .084 inch thick 3003-H22 embossed aluminum tread plate.

3.11 STEP TRIM KICKPLATE

The cab steps shall include a kick plate in the rise of each step. The risers shall be trimmed in 3003-H22 aluminum Tread-plate which is 0.072 inches thick.

3.12 INTERIOR DOOR TRIM

The doors of the cab shall include a two (2) piece trim constructed of 14-gauge 304 stainless steel and shall be mounted to each door. The stainless shall have a brushed finish.

3.13 DOOR TRIM KICKPLATE

The inner door panels shall include a brushed stainless steel kick plate which shall be fastened to the lower portion of the door panels on each door.

3.14 DOOR TRIM SCUFF PLATE

The trim along the door shall include a stainless steel plate along the door jam.

3.15 CAB DOOR TRIM REFLECTIVE

The interior of each door shall include a white reflective tape that measures 1.00 inch in width installed vertically along the outer rear edge of the door.

3.16 CAB DOOR STOP SIGNS

An 18.00 inch reflective octagon stop sign shall be supplied and installed on the inner door panel of each door.

3.17 GLASS FRONT DOOR

Power windows shall be provided on the four crew cab door windows with individual power window switch on each door and a master switch panel for all four windows located on the driver door.

The front cab doors shall include a window which is a minimum of 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished via electric actuation. The power windows shall be controlled via switching on the driver door and by a switch on each respective door.

There shall be an irregular shaped fixed window which shall measure approximately 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

3.18 GLASS TINT FRONT DOOR

The windows located in the left and right front doors shall have a standard green automotive tint to allow seventy-five percent (75%) light transmittance.

3.19 CAB FENDER

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Liners shall be fully removable. **No self tapping screws will be accepted.**

3.20 FRONT MUD FLAPS

Heavy-duty mud flaps shall be provided at the rear of each front wheel. Mud flaps shall be the full width of the wheel well liner. Mud flap shall be made of a heavy-duty semi-flexible material to prevent "sailing".

3.21 CAB ENGINE TUNNEL

The cab interior shall include a fixed type engine tunnel cover sized to accommodate an engine with a small or medium block. The engine tunnel shall be an integral part of the cab constructed of 5052-H32 Marine Grade, .190 of an inch thick, one hundred percent (100%) primary aluminum plate. The tunnel shall be a maximum of 41.50 inches wide X 23.00 inches high.

The engine tunnel shall be insulated with multi-layer insulating material, consisting of foam, a sound barrier of 1.00 pounds per square foot with a facing which resists heat transfer. This insulation shall be held in place by adhesive, aluminum stick pins and retention caps. Any exposed insulation seams and edges shall be sealed reducing moisture and debris.

3.22 FLUID FILLS AND CHECKS

Access shall be provided for the following fluid fills and checks without tilting of the cab. Access may be through the front grille of the apparatus or through access doors in the engine tunnel.

Engine Oil
 Engine Coolant
 Power Steering Fluid
 Transmission Fluid
 Windshield Washer Fluid

3.23 LH EXTERIOR MID EMS COMPARTMENT

The cab shall include a compartment located in the middle of the wall above the left side wheel well. This compartment shall measure a minimum of 17.00 inches wide X 43.00 inches high X 23.00 inches deep. The compartment shall have a minimum clear door opening of 14.50 inches wide X 37.50 inches high. The compartment shall be installed in the left side of the cab behind the driver's seat and shall be accessible from the outside of the cab through a hinged box pan door with a full length stainless steel piano style hinge. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

One (1) adjustable shelf shall be supplied and installed.

3.24 LH EXTERIOR MID EMS COMPARTMENT LIGHTING

There shall be one (1) Amdor brand LED strip light installed to illuminate the exterior mid EMS compartment on the left side of the cab above the wheel well.

3.25 RH EXTERIOR MID EMS COMPARTMENT

The cab shall include a compartment located in the middle of the wall above the right side wheel well. This compartment shall measure a minimum of 17.00 inches wide X 43.00 inches high X 23.00 inches deep. The compartment shall have a minimum clear door opening of 14.50 inches wide X 37.50 inches high. The compartment shall be installed in the right side of the cab behind the officer's seat and shall be accessible from the outside of the cab through a hinged box pan door with a full length stainless steel piano style hinge. There shall be a switch to activate a light inside the compartment and the open compartment warning light in the cab in the event the door is left ajar.

One (1) adjustable shelf shall be supplied and installed.

3.26 RH EXTERIOR MID EMS COMPARTMENT LIGHTING

There shall be one (1) Amdor brand LED strip light installed to illuminate the exterior mid EMS compartment on the right side of the cab above the wheel well.

3.27 EXTERIOR MID EMS COMPARTMENT EXTERIOR FINISH

The EMS compartment exterior shall feature a painted finish which shall match the interior color.

3.28 EXTERIOR MID EMS COMPARTMENT INTERIOR FINISH

The EMS compartment interior shall feature a DA sanded finish.

Each compartment shall be lined with smooth aluminum plate to create a smooth surface to slide EMS soft bags in and out with out snagging on the shelf (Unistrut) tracking and the door frame edges.

3.29 GLASS REAR DOOR RH

The rear right hand side crew door shall include a window which is a minimum 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the inner door panel and on the driver's door panel.

3.30 GLASS TINT REAR DOOR RH

The window located in the right hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

3.31 GLASS REAR DOOR LH

The rear left hand side crew door shall include a window which is a minimum of 27.00 inches in width X 26.00 inches in height. The window shall be a powered type and shall be controlled by a switch on the inner door panel and on the driver's door panel.

3.32 GLASS TINT REAR DOOR LH

The window located in the left hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

3.33 INTERIOR TRIM FLOOR TREADPLATE

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch sound absorbing closed cell foam and a 0.06 inch non-slip vinyl surface with a pebble grain style finish. All exposed seams shall be sealed with a silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention. The floor then shall be covered in 3003-H22 aluminum embossed tread plate which is 0.084 inches thick. The mat shall be held in place by a pressure sensitive adhesive and the diamond plate shall be held down with screws and the aluminum cornering trim.

3.34 INTERIOR TRIM VINYL

The cab interior shall include trim on the front and rear crew ceiling and the cab side walls. The trim shall be constructed of insulated vinyl over a hard board backing. This trim shall be securely fastened to the interior of the cab utilizing snap style fasteners with a decorative cover for a more appealing appearance. The rear wall of the cab shall be trimmed with bright finish aluminum tread plate.

3.35 INTERIOR TRIM VINYL COLOR

The cab interior vinyl trim surfaces shall be dark gray in color.

3.36 INTERIOR ABS TRIM COLOR

The cab interior vacuum formed ABS composite trim surfaces shall be dark gray in color.

3.37 HEADER TRIM

The cab interior shall include a header over the driver and officer dash which shall be vacuum formed ABS composite panel with robust styling grooves. The header shall include (2) vents within the header which are directed at the windshield. Also included shall be a drop down panel for access behind the header for service of electronic components, if necessary. The header shall include (2) cut outs, (1) over the driver and (1) over the officer to accommodate speakers and molded areas to accommodate the sun visors.

3.38 CAB INTERIOR TRIM LH DASH ABS

The driver side dash shall be a (1) piece hinged panel which shall be constructed of durable vacuum formed ABS composite panel which shall be custom molded for a perfect fit surrounding the dash.

3.39 TRIM CENTER DASH

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate. There shall be four (4) holes located on the top of the dash near each outer edge outboard of the electrical access opening for ventilation.

3.40 TRIM RH DASH

The right hand dash trim shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick, one hundred percent (100%) primary aluminum plate and shall include a glove compartment with a hinged non-locking door and a Mobile Data Terminal (MDT) provision. The glove compartment shall measure 14.00 inches wide X 6.63 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment, recessed 3.00 inches below the surface of the dash and measure 16.00 inches wide X 14.00 inches deep. The surfaces of the glove compartment and the MDT provision shall include a coating of Line-X® brand protective coating that shall be gray in color.

3.41 CAB PAINT INTERIOR

The interior metal surfaces shall be painted with a Zolatone #20-78 dark red texture finish.

3.42 INTERIOR GRAB HANDLE "A" PILLAR

A rubber covered 11.00 inch grab handle shall be provided on the inside of the cab on the hinge post at the driver and officer doors with the top of the officer side grab handle located 2.00 inches below the center line of the cab.

3.43 INTERIOR GRAB HANDLE FRONT DOOR

Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish and provide ease of access and exiting the cab.

3.44 INTERIOR GRAB HANDLE REAR DOOR

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door the full width of the door below the window glass and shall measure 30 inches in length.

3.45 CLIMATE CONTROL

The cab shall be equipped with a ceiling mounted combination defrost / heating and air-conditioning system mounted above the engine tunnel in a central location.

The system shall offer sixteen (16) adjustable louvers. Six (6) of the louvers shall face forward towards the windshield, offering 45,000 BTU of heat at 320 CFM for defrosting. The system shall include six (6) rearward facing louvers to direct air for the crew area and four (4) for driver and officer comfort. The HVAC system shall be designed to produce 60,000 BTU of heat and 32,000 BTU of cooling. The HVAC cover shall be made of aluminum which shall be coated with a customer specified interior paint, or protective coating.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-Quip EZ-Clip fittings.

The climate control system shall include a gravity drain for water management. The gravity drain shall remove condensation from the air conditioning system with the assistance of a venturi pump.

The heating, defrosting and air conditioning controls shall be on the dash next to driver panel, in a position which is easily accessible to the driver. The climate control shall be activated by a rotary switch.

The overhead HVAC cover shall be painted with a Zolatone #20-78 dark red texture finish.

3.46 AUXILIARY CLIMATE CONTROL REAR CREW

One (1) 53,500 BTU heater shall be provided and installed in the rear section of the crew cab under the center forward facing seat riser. The fan controls shall be located on the heater unit.

The auxiliary heater system hoses shall be silicone with stainless steel constant torque clamps approved for use with silicone hose. The auxiliary heater system shall include one (1) seasonal shut-off valve. The valve shall be supplied at the front of the right hand corner of the cab.

3.48 HEATER HOSE INSULATION

The heater hoses leading from the engine to the cab shall include a foam insulation wrap which runs the length of the hose. The heating hoses, which shall be routed inside the cab, shall not be insulated.

3.49 A/C CONDENSER LOCATION

A roof mounted A/C condenser shall be installed centered on cab forward of raised roof against the slope rise.

3.50 A/C COMPRESSOR

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 32000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

3.51 CAB INSULATION

The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall include a foil facing which includes grid reinforcement.

3.52 UNDER CAB INSULATION

The underside of the cab tunnel surrounding the engine shall be lined with foam insulation, engineered for application inside diesel engine compartments.

The foam insulation shall measure a minimum of .56 inch thick including a 1.0#/sf PVC barrier, and moisture and heat reflective foil backing, reinforced with fiberglass strands.

The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads.

The foam shall meet or exceed MVSS 302 flammability test.

The foam shall be cut precisely to fit each section and sealed for additional heat and sound deflection.

3.53 CAB CRASH TEST SUBMISSION

Bidders shall include in their bid proposal crash test results for the cab that they are supplying for review by the Fire Department.

3.54 CAB TILT SYSTEM

The entire cab shall be capable of tilting 45 degrees to allow for easy maintenance of the engine and transmission.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90" ball and be anchored to frame brackets with 1.25" diameter studs.

A steel safety channel assembly shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.

3.55 CAB TILT CONTROL RECEPTACLE

The cab tilt shall include a receptacle which shall be flush mounted on the right front bumper side extension below the M 6 series inter sector warning light. The remote control pendant shall also include 20.00 feet of cable which also includes a mating connector.

3.56 LOAD MANAGEMENT SYSTEM

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have (16) programmable outputs to supply warning and load switching requirements. Outputs one (1) through (12) shall be independently programmable to activate during the scene mode, the response mode, or both. These outputs can also be programmed to activate with the ignition or master warning switch, or to sequence and shed along with the priority. Output (13) shall be designated to activate a fast idle system. Output (14) shall provide a low voltage warning for an isolated battery. Output (15) is a user configurable output and shall be programmable for activating between 10.50 and 15.00 volts. Output (16) shall provide a low voltage alarm that activates at the NFPA required 11.80 volts. The TSM shall have a digital display to indicate system voltage in normal operation mode and also indicate the output configuration during programming mode. The TSM shall be protected against reverse polarity and shorted outputs and be enclosed in a metal enclosure to enhance EMI/RFI protection.

3.57 BATTERY CONDITIONER

There shall be one (1) Kussmaul Model # 091-165-12 Auto Charge 1200 battery charger system installed in the vehicle's electrical system. The charger shall be fully automatic and shall maintain the truck batteries at a full charge level when connected to a 110 VAC source. Remote voltage sensing shall be provided to compensate the charger output for the voltage drop in the charging wires. A remote mounted indicator Kussmaul Model # 091-165-016 shall be provided and mounted next to the Super autoeject.

3.58 AUTO EJECT PLUG

Kussmaul Model # 091-55-20-120, Super Auto Eject and Kussmaul Model # 091-55RD spring cover shall be installed on the left side of the cab between the front and rear cab doors and easily accessible for periodic removal and maintenance without removing the wheel well liner.

3.59 ACCESSORY POWER DISTRIBUTION PANEL

An accessory power distribution panel shall be installed behind the center switch panel. The panel shall feature ten (10) blade type fuses protected by a 40 amp fuse. The panel shall be capable of carrying up to a maximum 40 amp battery direct load.

3.59a POWER & GROUND STUD

The electrical distribution panel shall include two (2) power studs. The studs shall be size #10 and each of the power studs shall be circuit protected with a fuse of the specified amperage. One (1) power stud shall be capable of carrying up to a 40 amp battery direct load. One (1) power stud shall be capable of carrying up to a 15 amp ignition switched load. The two (2) power studs shall share one (1) #10 ground stud that shall be 0.38 inch diameter.

3.59b AUXILIARY POWER & GROUND STUD

An auxiliary set of power and ground studs shall be provided and installed behind the officer seat and shall be wired to a 40 amp breaker. The studs shall be 0.38 inch diameter and capable of carrying up to a 40 amp battery direct load.

3.59c ADDITIONAL POWER & GROUND STUD

An additional set of power and ground studs shall be provided and installed behind the electrical center cover with a 50 amp fuse. The studs shall be .375 inch diameter and capable of carrying up to a 50 amp battery direct load.

3.60 POWER POINT DASH MOUNT

The cab shall include one (1) 12 volt cigarette lighter type receptacle installed on the right side dash panel dedicated as a power source for additional portable or mobile items. The receptacle shall be wired battery direct.

3.61 RADIO ANTENNAS

Four (4) radio antennas(s) shall be supplied and mounted on the roof directly behind the light bar. All antenna wiring will terminate to the front center dash area. Antenna to be supplied: Andrews model # K-794, low profile mounts for thick roofs. The Town of Fairfield will supply antenna mast.

3.62 DRIVER'S SEAT

An H.O. Bostrom Sierra air suspension with fully integrated three (3) point seatbelt and black Durawear wear-resistant, waterproof fabric shall be provided.

3.63 OFFICER'S SEAT

A H.O. Bostrom Tanker 450/ABTS with fully integrated three (3) point seatbelt with black Durawear wear-resistant, waterproof fabric shall be provided.

Seat shall be provided with Bostrom SecureAll SCBA locking system to accommodate a Scott 4.5 SCBA with 30 minute cylinder.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release.

3.64 CAB FRONT UNDERSEAT STORAGE ACCESS

The left and right under seat storage areas shall have a solid aluminum hinged door with a locking latch.

3.65 RIGHT FORWARD FACING CREW SEAT

The crew area shall include a seat in the right forward facing outer position which shall be a theatre style seat. The rear wall padded trim shall act as the backrest for the seat. The seat shall feature a padded seat, and cushion which shall be hinged and attached to the wall providing optimum space savings. The seat shall remain in the stored position until occupied.

There shall be a red, three-point shoulder harness with lap belt and an automatic retractor attached to the cab and available to the seat. The buckle portion of the seat belt shall be mounted on a rigid or semi-rigid stalk such that the buckle remains positioned in an accessible location. The seat belt assembly anchorages shall conform to the Federal Safety Standard (FMVSS) No. 210, "Seat belt assembly anchorages".

3.66 SEAT CREW FORWARD FACING CENTER

The crew area shall include two (2) forward facing H.O. Bostrom Firefighter Series Flip Up SCBA seats in the center position. The seat and cushion shall be hinged and compact in design for additional room and shall remain in the stored position until occupied.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a red, three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly.

The forward facing center seats shall feature a SecureAll™ SCBA locking system to accommodate a Scott 4.5 SCBA with a 30 minute bottle.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release.

3.67 SEAT FRAME FORWARD FACING

The forward facing center seating positions shall include an enclosed seat frame which is located and installed on the rear wall. The seat frame shall be constructed of 5052-H32 Marine Grade, .190 inch thick, 100 percent primary smooth aluminum plate. The seat box shall be painted with Zolatone #20-78 dark red texture finish.

3.68 SEAT FRAME FORWARD FACING STORAGE ACCESS

The seat frame shall include a forward facing vent. The vent shall have a grille to enclose the seat frame and prevent firefighter access into the seat frame area.

3.69 TILT STEERING WHEEL TELESCOPING

The cab shall include a Douglas Autotech steering column which shall include a seven (7) position tilt, a 2.25 inch telescopic adjustment, and an 18.00 inch, two (2) spoke steering wheel located at the driver's position. The steering wheel shall be covered with black polyurethane foam padding. The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

3.70 CAB GRAB HANDLES

The cab shall include four (4) 18.00 inch three-piece knurled aluminum, anti-slip exterior assist handles, installed one (1) behind each cab entry door. The grab handle shall be made of extruded aluminum with a knurled finish to enable non-slip assistance with a gloved hand. Each grab handle shall include a stainless steel plate.

3.71 CAB MIRRORS

Velvac West Coast style mirrors model 708211 shall be provided and installed on the driver's and officer's doors. The mirrors shall be mounted to the cab doors with tubular stainless steel swing away arms and the mirror heads shall be center mounted on the arms to provide rigid mounting to reduce vibration.

The mirror heads shall measure 8.00 inches wide X 16.00 inches high. The flat mirrors shall be heated and remote controlled with horizontal actuation. The mirror control switches shall be located within easy reach of the driver. Manually adjustable convex mirrors which are 6.50 inches wide x 6.00 inches high shall be provided below the flat mirrors.

3.71a FORWARD CAB ROUND CONVEX MIRROR

A Stainless Steel adjustable 10" round convex mirror shall be mounted on the upper right hand side of the cab. The mirror shall be mounted in a manner to give the driver full view of the forward cab and bumper area.

3.72 EXTERIOR TRIM REAR CORNER

There shall be mirror finish stainless steel scuff plates on the outside corners at the back of the cab. The stainless steel plate shall be affixed to the cab using two-sided adhesive tape.

3.73 TRIM REAR WALL EXTERIOR

The exterior rear wall of the cab shall include 3003-H22 aluminum tread plate which shall be 0.072 inches thick. This plate shall cover the entire rear wall of the cab.

3.74 TRIM ROOF

The entire raised roof of the cab roof shall include 3003-H22 bright aluminum embossed tread plate which is 0.084 inches thick.

3.75 INTERIOR TRIM VINYL

The cab interior shall include trim on the front ceiling, rear crew ceiling, and the cab walls. It shall be easily removable to assist in maintenance. The trim shall be constructed of insulated vinyl over a hard board backing.

The cab shall be provided with a removable headliner for ease of servicing the electrical wiring placed in the cab roof. Headliner shall be the multi-piece type (minimum of three (3) sections) so that the entire liner does not have to be removed for localized maintenance. No self-tapping screws will be accepted for the headliner. Nutserts or extruded U-nuts will be accepted only.

The cab interior shall include a header over the driver and officer dash which shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum.

3.76 INTERIOR TRIM SUN VISOR

The header shall include two (2) 7.00 inches high X 18.00 inches wide impact resistant, transparent acrylic polycarbonate sun visors with a smoke gray tint shall be provided and installed on the header above the driver and officer.

The see thru visors are designed for maximum flexibility of positioning utilizing an arm with virtually unlimited adjustability with 13.50 inch long lateral travel of the tinted visor at the end of the arm which can be locked in place by a thumbscrew.

The visors should be easily adjustable.

3.77 AUXILIARY DEFROSTER FANS

The cab shall include two (2) all metal 6.00 inch air circulation fans installed overhead in the center of the cab rearward of the windshield. Each fan shall be controlled by an individual toggle switch on each fan.

3.78 CAB DASH AND INSTRUMENTS

The cab dash shall be laid out for the driver to easily view and operate all controls and gauges while seated and belted. A non-glare switch panel, custom designed to accommodate the appropriate functions, shall be provided on top of the engine enclosure. Rocker type switches with integral indicator lights shall be provided to advise that the switch has been energized. All panels and switches shall be illuminated for night operations. All switches shall be accessible to the driver and officer while seated and belted.

Turn signal indicator lights shall be located to the right and left of the instrument panel with the high beam indicator light in the top center of instrument panel.

Windshield washer shall be provided with accessible controls and a two (2) quart reservoir.

An air restriction indicator shall be provided. A visual and audible alarm system shall be provided which shall include warning indicator lights for check engine and stop engine.

One (1) green indicator light shall be installed in the driving compartment, which shall indicate when the pump shift has been completed and shall be labeled "Pump Engaged".

A second green indicator light shall also be provided in the driving compartment and also on the pump operator's panel. These two lights shall be energized when the pump shift has been completed, the chassis transmission is engaged in pump gear and the parking brake is applied. The light in the driving compartment shall be labeled "OK-To-Pump". The light on the pump panel shall be located just above the throttle control and shall be labeled "Warning: Do Not Open Throttle Unless Light Is On". Indicator lights in the cab shall be located adjacent to the pump shift control.

3.79 ENGINE GAUGES

The standard instruments shall be mounted in a removable; bottom hinged, panel in front of the steering column directly visible to the driver and shall include the following:

- Electric speedometer with odometer
- Electric tachometer
- Engine hour meter
- Voltmeter
- Amp gauge
- Oil pressure gauge
- Water temperature gauge
- Fuel level gauge
- Air pressure gauges [two (2) gauges required]
- Transmission temperature gauge

A rocker type ignition switch with green indicator light and a three position headlight-parking light “on/off” switch with red indicator shall be provided to the left of the steering column.

3.80 OFFICER SPEEDOMETER

An additional speedometer shall be provided on the right hand side of the dash or overhead console so that the officer can monitor vehicle speed.

3.81 PORTABLE HANDLIGHTS AND CHARGERS

Four (4) **Streamlight** LED “E-SPOT” Firebox Orange flashlights with vehicle mount chargers shall be supplied. Two (2) lights with chargers shall be mounted on the right side rear jumpseat area and two (2) lights with chargers shall be mounted on the left side rear jumpseat area. Lights shall be easily removable while standing on the ground. Final location to be approved by fire department.

One (1) **Streamlight** model SLXP-20 LED, ABS orange, with charger mounted in the officers’ position.

3.82 COMPUTER MOUNT AND DOCKING STATION

One (1) Havis Products Part # DS-PAN-111 Docking Station shall be supplied and installed in front of the officer’s position, on locking slides with adjustable swivel.

3.83 MAP BOOK POCKET

A storage pocket for a 3 ring binder shall be mounted in front of officer in the dashboard to accommodate the fire department map book. This will be located in place of a glove compartment. Dimensions shall be a minimum of 3” high by 9.75” deep by 13.75” wide.

3.84 ENGINE TUNNEL STORAGE BIN

An aluminum storage bin and book pockets shall be supplied and installed on top of engine tunnel. The storage bin shall be a minimum of 12”X24”X14” with a latched hinged lid. The book pockets shall contain (8) pockets and be a total of 12” X 24”. A velcro strap shall be provided and installed to retain the books. The storage bin and pocket assembly shall be painted to match dark red zolotone interior paint.

3.85 FIRECOM INTERCOM SYSTEM

A Firecom model 3020R shall be provided and installed with two (2) radio interface cables as directed by the Town of Fairfield. There shall also be four (4) Firecom model FH-10 head sets with radio transmit (Red PTT buttons) and four (4) model HM-10 plug in modules. One (1) Firecom model DM-1 push-to-talk button shall be mounted in the officer’s position. Four (4) Firecom model HGR-1 headset hanger hooks shall also be supplied. The entire Firecom intercom system shall be installed at the Contractor’s factory; all mounting locations must be approved by the Town of Fairfield before installation.

CHAPTER 4 – Pumper Body

4.1 PUMP MODULE

A separate pump house module shall be fabricated and attached to the chassis frame rails at four (4) points. The material shall be stainless steel tubing, angles and channels. Front and rear of the enclosure shall be 1/8" bright finished aluminum treadplate, attached to the framing material with stainless steel bolts and nuts.

Two (2) service doors shall be located on the front of pump enclosure module. The doors shall be fabricated from 1/8" aluminum treadplate with "D-ring" latch.

The pump module shall not be attached to the cab or the body.

4.2 EXHAUST STACK THROUGH PUMP MODULE

One (1) 5" OD exhaust stack shall be supplied and installed from the chassis exhaust system through the pump compartment. The location of the stack centerline shall be 73" in from the driver's side outer tire edge. The stack height shall be 116" from the ground to the tip of the stack. A chrome exhaust stack shall be installed angled to the rear of the apparatus. The stack shall be one piece with no joints and secured in a minimum of two spots to ensure rigidity for use with the fire department station exhaust removal system. It shall be properly insulated with 1" Firwin heat insulation and properly vented from the pump house. An exhaust fan shall be installed to remove the heat from the exhaust stack out of the pump house. This fan shall activate when the apparatus is put into pump and shall have a disconnect switch to deactivate it for winter operations.

4.3 RUNNINGBOARDS

Running boards shall be made of diamond plate aluminum "grip strut" inserts and shall be carried by heavy-duty supports. An air space shall be provided between the running board, the body and the operator's stand to prevent moisture from being trapped between these components.

4.4 CROSSLAY HOSEBEDS

There shall be two (2) cross lay hosebeds provided, cutout and recessed into the forward portion of the pump module. Crosslay hosebeds shall be placed slightly rearward so that the hose can clear the emergency telescopic scene lights mounted on the back of the cab. The bottom of each cross lay shall be a maximum of 66" from the ground. Each hose bed shall have the capacity to carry four (4) 50' lengths of Firequip Commander supreme double jacketed 1 3/4" attack hose with a TFT Midmatic Pistol Grip Nozzle. Each hose bed shall have a double row of hose.

A two-inch (2") discharge shall terminate in the bottom of each cross lay bed. A 1-1/2" NST 90 degree swivel outlet shall terminate in each hose bed.

The sides of the hose bed shall be constructed of stainless steel and they shall have a large vertical radius at each end to form hose payout guides. A horizontal stainless steel hose guide with a large radius shall also be provided at the bottom of the outer ends of the hose bed. The interior of the hose beds shall be smooth and free from all sharp projections that might damage hose. Stainless steel interior sides shall have a "DA" type finish and shall not be painted.

One (1) adjustable hose bed partition (divider) shall be provided.

Divider shall be fully adjustable by providing slide tracks at each end of the hose bed. The divider shall be held in place by tightening two (2) 5/16" Phillips flathead or overhead bolts at each end of the partition bottom flanges. Mounting bolts shall turn into threaded slide blocks located below the track.

The bottom of these hose compartments shall be provided with removable grating to provide ventilation.

4.5 STAINLESS STEEL BODY CONSTRUCTION

The fabrication of the pumper body shall be a minimum 12-gauge type #304 stainless steel. The compartments must be fabricated as separate modules and welded to the stainless steel tubing cross members.

All lower side-mounted compartments shall be a minimum of 26" deep useable space.

No "stud welding" shall be used in the assembly of any of the parts of the body.

The compartments shall be formed from one (1) piece of material with the ends being welded on. All welding performed is to be done with the "TIG" or "MIG" process.

Each compartment door opening is flanged around the entire perimeter for strength. All seams in the compartments shall be welded continuously.

As a result of the full depth, exterior side compartments, special enclosures shall be fabricated around the chassis spring hangers and springs in the compartments located fore and aft by of the rear wheels. Provisions shall be made for access to grease fittings and the spring hanger pins and bushings.

4.6 BODY SUBFRAME

All framing material shall be stainless steel, a minimum of 3" x 3" x 1/4" wall tubing shall be used for the main support rails and cross members. The sub-frame shall be fastened to the chassis rails with Grade 8 steel bolts. The sub-frame shall be an integral part of the supports for the body and water tank. The framing supports shall go through the side compartments attaching to the body and to the wheel well areas. All material for attachment brackets, running boards and compartments shall be stainless steel.

A print of the sub-frame shall be provided with the bid.

4.7 COMPARTMENT CONSTRUCTION:

Type 304 stainless steel sheet 12-gauge thick shall be used for the compartments. Each compartment shall be formed from a single piece of material, broken top and bottom with the sides being the only welded portion of the module. All compartment seams must be continuously welded. Compartments shall be bolted to the tubing frame using 2" x 2" x 1/4" stainless steel angle gussets.

The bottom of all compartments shall be reinforced with stainless steel channels.

4.8 INTERIOR COMPARTMENT FINISH

All interior compartments shall have manufacturers "swirl" finish.

4.9 COMPARTMENT DIMENSIONS

The following dimensions are useable space dimensions. This would be the dimension after all protective panels are in place and equipment is about to be placed in the compartment.

The compartment sizes shall be as follows:

Compartment L-1 (left front): Compartment ahead of rear wheels, Interior shall be a minimum of 32.50" wide x 67.50" high x 26" deep lower half (12" upper). Door opening should be a minimum of 26.75" wide x 57.00" high. Roll-up door must be provided on this compartment.

Compartment L-2 (left side): Compartment above wheel well, must be a minimum of 62.50" wide x 38.50" high x 12" deep. Door opening must be a minimum of 62.50" wide x 34.50" high. Center compartment is to have a horizontally hinged, single lift-up door.

Compartment L-3 (left side): Compartment behind rear wheels, must be a minimum of 44.50" wide x 67.50" high x 26" deep lower half (12" upper)(Lower section is transverse through rear compartment into R-3). Door opening must be a minimum of 37.50" wide x 57.50" high. Roll-up door must be provided on this compartment.

Compartment R-1 (right side): Compartment ahead of rear wheels, must be a minimum of 33.50" wide x 29.5" high X 26" deep. Door opening must be a minimum of 29" x 26.50" high with vertically hinged door.

Compartment R-2 (right side): One (1) compartment above wheel well must be a minimum of 140.50" wide x 16" high x 12" deep. Two (2) door openings must be a minimum of 64" wide x 12.00" high with horizontally hinged up doors.

Compartment R-3 (right side): Compartment behind rear wheels, must be a minimum of 44.50" wide x 29.50" high x 26" deep (Compartment is transverse through rear compartment and into L-3). Door opening must be a minimum of 35.50" wide x 26.50" high with two vertically hinged doors.

Rear Compartment: Compartment above tailboard, shall be a minimum of 42.50" wide x 31.50" high x 23" deep. Door opening must be a minimum of 34" wide x 31" high. Roll up door must be provided on this compartment.

These compartment dimensions are a guideline. Minimal changes will be considered. Complete specifications of any deviation must be included with the bid and will be subject to Fire Department approval.

4.10 COMPARTMENT SHELVING

Six (6) adjustable shelves made from 12-gauge stainless steel shall be provided. Each shelf shall be supported by four (4) stainless steel angles bolted to Unistrut tracks for adjustability.

Compartment L-1: Shall have two (2) shelves in the upper 12" deep portion.

Compartment L-2: Shall have one (1) shelf in the middle.

Compartment L-3: Shall have two (2) shelves in the upper 12" deep portion.

Compartment R-1: Shall have one (1) shelf in the middle.

4.11 COMPARTMENT DOORS (ROLL-UP STYLE)

All roll-up compartment doors shall be manufactured by Amdor.

Replacement parts shall be available in two (2) to three (3) working days.

The slats shall be double wall box frame extrusion. The exterior surface shall be flat, interior surface shall be concave to prevent loose equipment from jamming the door.

Slats shall be anodized to eliminate oxidation and include inner locking end shoes on every slat secured by Punch-Dimple process.

The slats shall have interlocking joints with a folding locking flange.

Between each slat shall be a PVC/Vinyl inner seal to prevent metal to metal contact.

Door tracks shall be one-piece aluminum, which shall include an attaching flange and finishing flange incorporated into its design.

Drip rail shall have built in replacement wiper seal. Drip rail shall be made of aluminum.

Roll-up doors shall have a 4" diameter counter.

Doors shall be secured with a full width lift bar, to be operable by one (1) hand, even with heavy gloves. Securing methods shall be a positive latch device.

These doors shall be provided on all compartments that are specified to have roll-up doors.

4.12 COMPARTMENT DOORS (HINGED)

All doors shall be box pan overlapping type made out of stainless steel. The outside skin shall be 12-gauge with a 14-gauge re-enforced pan.

All doors shall have 1/4" pin full length stainless steel continues hinges.

All hinged doors shall have gas cylinder type stays.

All doors shall have stainless steel 6" "D" style slam latches installed.

All doors shall have a door switch that controls the compartment light and also the warning light in the cab.

4.13 ADDITIONAL COMPARTMENT FEATURES

All compartments shall have sweep out style floors.

All compartments shall have two (2) LED strip lights operated by a door switch.

All compartments shall have 6" x 6" louvered vents in the rear walls.

Compartment floors and shelves shall be covered with black "Vyna grip" matting.

Stainless steel Unistrut shelf tracks shall be installed in the all compartments except for the center compartment on the right side; six (6) per compartment.

False bulkheads shall be provided over the lights on the inside rear wall of the rear side compartments to protect the stop, tail, and turn lights and wiring from damage. Panels shall be removable. Nutserts or extruded U-nuts shall be used for the removable panels, no self-tapping screws will be allowed.

4.14 EXTINGUISHERS AND EXTINGUISHER HOLDER

A 4 position horizontal extinguisher bin shall be installed in the right rear compartment.

The following extinguishers shall be supplied and mounted:

One (1) **Amerex** 15 lb. Co2

Two (2) **Amerex** 20 lb. BC

One (1) 2 1/2 gallon pressurized water.

4.15 RADIO SPEAKERS

Motorola radio speaker model # HSN4031B shall be furnished in the upper left hand corner of the L-1 "pump operators' compartment. This shall be wired to the Fairfield primary mobile radio.

A flexible, liquid tight, 1 ¼ "conduit shall be provided between the L-1 compartment and the cab front dash area to run the wiring for the speaker.

4.16 WHEEL WELL AIR BOTTLE COMPARTMENTS

Three (3) S.C.B.A. cylinder compartments shall be supplied in the wheel well panels of the body. Each compartment shall include a brushed stainless steel N.F.P.A. compliant doors, hardware and cylinder retainer straps. Two of them shall be located on the passenger side and hold two cylinders each. One shall be located on the driver's side and hold one cylinder.

The cylinder compartment dimensions shall be 28"deep X 7"diameter.

4.17 PIKE POLES AND COMPARTMENT

One (1) compartment shall be provided and be accessible from the left rear of the vehicle from a separate fold down door. The following items shall be supplied and mounted in tubes and slides:

One (1) Fire Hooks Unlimited 8 ft. APH

One (1) Fire Hooks Unlimited 6 ft. APH.

4.18 WHEEL WELL EXTERIOR PANEL

The 12-gauge stainless steel exterior panel shall be integral with the compartments and should be continuously welded where it meets the compartments. The wheel well opening shall be equipped with a round radius polished stainless steel fenderette bolted in place. The exterior panel shall be covered with brushed stainless steel trim to protect the exterior from damage from ice chains.

The fenderette shall have beaded silicon or welting between fenders and wheel well panel.

4.19 WHEEL WELL FENDER LINER

The inner fender above the tires shall be an integral full width stainless steel liner bolted in place. Prior to installation, the complete wheel well area shall be undercoated.

4.20 RUB RAIL CONSTRUCTION

The protection of the apparatus body full length along the side of the vehicle is of critical importance. The rub rail assembly shall be of polished 1" x 1" x 16-gauge stainless steel tubing. Rails are spaced out from the body with nylon washers and fastened to the body with stainless steel bolts and nuts. Rails are polished to a mirror finish. This assembly shall blend into the front and rear corners of the body, and rolled radius of the wheel well assembly.

4.21 HOSE BODY

The 12-gauge Type #304 stainless steel body side panels shall be of one-piece construction from front to rear of apparatus, with a triple channel break on upper section.

Hose bed floor shall be 3" X 1" aluminum channels with proper spacing for good air ventilation. The floors shall be made in two (2) pieces for easy removal.

Two (2) hose body dividers shall be supplied using ¼" thick 5152 aluminum plate. This divider shall be infinitely adjustable by means of a Unistrut channel welded in the hose body floor, front and rear. Rounded corners shall be furnished at rear.

Hose bed capacities shall be:

15-100 ft. lengths of 5" Firequip LDH

13-50 ft. lengths of 2½" Firequip Command Supreme

4-50 ft. lengths of 2½" Firequip Command Supreme with 2 ½" Smooth bore nozzle (play pipe).

4.21a HOSE BED COVER

A heavy duty, red vinyl hose bed cover shall be supplied and attached to the front, right, left and rear sides of the hose body with rope cord & buckles. There shall be alternating 6" reflective chevrons on the rear flap to meet the NFPA Standard.

The reflective chevrons on the rear flap of the hose bed cover shall align with the body chevrons on the rear body.

4.22 BODY HANDRAILS

Handrails to be 1.25" diameter. They shall have three (3) rubber inserts placed parallel to the longitudinal axis of the rail and equally spaced around its circumference. Inserts shall have a serrated exterior surface to provide a positive grip.

All handrail stanchions shall be chrome plated. They shall be bolted to the body with 0.25" stainless steel hex head bolts. Stanchions shall have a rubberized gasket placed between them and the body surface. A drain hole shall be provided in each bottom stanchion.

Handrails shall be installed as follows:

One (1) handrail, a minimum of 30" long, shall be provided and installed on each rear beavertail or body side, (i.e. in a convenient location for assistance in climbing onto and off the rear step).

One (1) full width cross rail shall be installed at the rear, above the hose bed and dividers, between the rear stanchions. This rear cross rail shall have a 0.5" threaded steel rod running the full length of its interior.

4.23 INTERMEDIATE HANDRAIL

A horizontal handrail shall be provided on the rear body face below the hose bed and above the intermediate rear step and/or rear full height compartment.

4.24 REAR STEP

The rear step support assembly, which also contains the rear-towing device, shall consist of 6" x 1" thick steel flat bars that are bolted to the chassis rails and extend down to the rear step level. 3" x 3" x 3/8" steel tubing shall be welded to the flat bars to form a rigid support for the "step-bumper". In addition, two (2) tow eyes shall be welded to this framework. The eyes shall be capable of flat towing the apparatus.

4.25 CLASS IV TRAILER HITCH AND TRAILER PLUG

A Class IV (4)-receiver style trailer hitch shall be supplied and mounted under the rear step sub structure. The hitch assembly shall be attached to the frame and not to the body. Wiring for chassis ground, emergency warning light master, and tail/stop/turn lights through a seven (7) way flat blade style trailer connector.

4.26 RUNNING BOARDS AND REAR STEP

The running boards shall be fabricated using 3/16" NFPA polished aluminum treadplate, with a double break on the outer edge, "down and in". They shall be furnished on each side under the pump panels. These running boards shall be approximately 54" L x 10" D. These shall have aluminum grip strut insert step surface.

NOTE: The rear step shall be 15" deep and 51" wide with 45 degree angled corners to act as a bumper. This shall have an aluminum grip strut insert.

4.27 ALUMINUM TREADPLATE OVERLAY

The aluminum treadplate shall be 1/8" polished NFPA type.

The vertical surfaces of the front compartments and rear compartments shall be covered with polished aluminum treadplate and held in place with stainless steel screws and nuts.

The walkways over the high side compartments shall be polished aluminum treadplate both sides. The treadplate shall be bent-up on hose body sides and down over compartments to act as a drip rail, fastened with stainless steel bolts and nuts. Where the treadplate meets the body sides, beaded silicon caulking shall be applied.

The surfaces of the compartments, each side at the rear that extend out to rear of the step, shall be covered with aluminum treadplate.

4.28 FOLDING STEPS

Eight (8) Cast Products large folding steps shall be provided and installed. Four (4) steps shall be located on the front of body for access to open bin above pump and hard suction sleeves (2 each side).

Two (2) steps shall be located at the rear to assist in climbing to hose bed.

4.29 HARD SUCTION HOSE

Two (2) 10-ft. lengths of Kocheck lightweight 6" suction hose with N.S.T. long handle, lightweight couplings shall be supplied. Both lengths of hose shall be mounted on the left side above the compartment in a stainless steel hose tray.

4.30 ZIAMATIC ELECTRIC LADDER RACK

A Ziamatic Model LAS "Quick Lift" Ladder lowering device shall be provided over the right hand compartments. A 30 amp, two-pole, double throw momentary switch located on the right side pump panel, properly labeled, shall control ladder system.

4.31 DUOSAFETY GROUND LADDERS

The following ground ladders shall be provided and mounted on the Ziamatic Quick Lift:

- One (1) 10 ft. Duo- Safety aluminum folding ladder (series 585-A)
- One (1) Duo-Safety 14 ft aluminum roof ladder, Series 775-A
- One (1) Duo-Safety 24 ft. 2-section aluminum extension ladder, Series 900-A

The 24' extension ladder shall be equipped with a nylon polyester three strand halyard rope, spliced at the eyelet end and whipped at the other end.

4.32 COLLAPSABLE WHEEL CHOCKS

Two (2) Ziamatic collapsible wheel chocks w/ mounts shall be provided and mounted forward of the rear wheels on the left side below the L-1 compartment.

4.33 MUD FLAPS

Heavy-duty mud flaps shall be provided and installed to the rear of each pair of dual rear wheels.

All mud flaps shall be an adequate width to protect apparatus from wheel debris.

CHAPTER 5 – Lighting

5.1 GENERAL LIGHTING

ALL lighting including; D.O.T. lights, warning lights, interior lights, compartment lights, pump panel lights, ground lights shall be either Whelen or Truck Light brand, unless otherwise specified.

ALL warning and DOT lights shall be LED unless otherwise specified.

Exterior cab lighting shall meet or exceed Federal Department of Transportation, Federal Motor Vehicle Safety Standards and any National Fire Protection Association requirements in effect at time of proposal.

Reflectors shall be placed on the cab and body as required by Federal standards. An amber reflector shall be placed on each side of cab and four red reflectors shall be located on the rear face and sides of body. Reflectors shall be rectangular in shape with chrome-plated trim around their perimeter.

5.2 HEADLIGHTS

The cab front shall include (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the ignition switch is in the "On" position and the parking brake is released.

The headlights and parking lights shall be controlled through a three position rocker switch on the driver's dash.

5.3 FRONT DIRECTIONAL LIGHTS

There shall be one (1) Whelen model 60A00TAR LED amber directional signal light installed on each side of the cab front face. Lights shall be mounted in a chrome plated light bezel.

Lights shall be mounted within the confines of the removable upper panels in the front face of the cab. Panels shall allow access to the cab dash electrical components including wiper motors, relays, flasher units and wiring.

5.4 SIDE DIRECTIONAL LIGHTS

Side directional lights shall be provided in addition to the front turn signals. They shall be Trucklight Model #20 Part #20304Y "bug eye" type. One (1) light shall be mounted just above the front fender on each side of the cab. Lights shall have an amber polycarbonate lens and highly polished stainless steel mounting flange or bezel.

5.5 CAB MARKER LAMPS

Five (5) amber LED type flush mount clearance and identification lights are to be installed across the top leading edge of the cab roof. Trucklight Model # 35 part # 35375Y or Grote M5 series part # 47913 shall be used.

5.6 CAB SPOTLIGHTS

There shall be two (2) 6" chrome plated Unity 330 series spotlights with LED bulbs and individual switches mounted at the front corners of the cab roof.

5.7 REAR BODY LIGHTS

Trucklight Model #35 part # 35075R (RED) marker and clearance lights shall be installed at rear of body. The three (3) light marker cluster shall be installed behind the rear step vertical flange and a rectangular opening with circular ends shall be made in front of each light. The clearance lights shall also be located behind the step flange if design permits. Two (2) lights shall be placed at each body corner, with one (1) light facing the rear and one (1) on the side. Trucklight part # 35720 "armored mount" will be accepted as an alternative guard for the series 35 lights on the step flange.

5.8 REAR PICKUP LIGHTS

One (1) Unity 6" chrome plated deck light with LED spot type bulb Unity model # AG 7682 shall be installed at the right rear of the apparatus and one (1) unity model # AG-H7619 with LED flood type bulb shall be installed on the left rear of the apparatus. Each light shall be manually operated and switched on and off at the light as well as from the cab. Power for these lights shall come from the ignition switch and not through the parking brake circuit.

5.9 MIDSHIP DIRECTIONAL LIGHTS

Two (2) Trucklight model Super 60 LED side turn signal lamps shall be mounted on the lower mid ship Sides of the vehicle. (Pump Panel lower running boards.)

5.10 STEPLIGHTS

Four (4) Trucklight Model #44 series dome LED grommet mount automatic step lights shall be provided, one (1) at each cab entrance door. Alternative light model (Trucklight Model # Super 10 Clear)

Four (4) additional Trucklight Model #44 series dome LED grommet mount step work lights shall be provided, one (1) on the inside of each beavertail to illuminate the rear step and one (1) each side on the front face of the side compartments to illuminate the pump panel steps.

5.11 GROUND LIGHTS

Eight (8) weatherproof Trucklight Model #44 LED grommet mount ground lights shall be provided underneath the vehicle: one (1) under each pump panel running board, one (1) under each compartment and two (2) under the rear panel board. **Locations to be confirmed by the FFD.**

5.12 INTERIOR OVERHEAD LIGHTING

The cab shall include Whelen two-section LED dome lamps with a red and white lens located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 7.00 inches in length X 3.00 inches in width with a black colored bezel. The white portion of each lamp shall be activated by opening the respective door and both the red and white portion can be activated by individual switches on each lamp.

An additional two-section LED red and white lamp shall be provided over the engine tunnel and be activated by individual switches on the lamp.

5.13 AUXILIARY DOME LIGHT MID CREW

The area within the middle of the crew cab shall include two (2) additional Whelen two-section LED dome lamps 3.00 inch X 7.00 inch rectangular shaped red and clear split lens within the headliner. These lamps shall be located 12.00 inches off center line on each side of the cab. The clear lamps shall be activated by the rear doors as well as push button activation on each lamp. The red lamps shall be activated by push button only.

5.14 EXTERIOR CAB LIGHTS SIDE

Two (2) Whelen model #9SCOENZR surface mount 900 series super LED scene lights shall be mounted one (1) on each side of the cab. The lights shall be on the upper side between the front and rear cab doors and they shall light with the interior lights when any of the crew cab doors open and also have their own separate switch marked scene lights.

5.15 EXTERIOR CAB LIGHTS BROW

Two (2) Whelen model PCP2 Pioneer Plus brow lights shall be provided and installed above the cab front windshield. Lights shall be wired to a switch on the dashboard.

5.16 MAP LIGHT

A Federal 18" Little Light #630122 cab map light with flexible neck and integral switch will be provided on the dash on the officer's side of the cab.

5.17 AUTOMATIC DOOR SWITCHES

Automatic door switches shall be provided for the cab dome lights.

5.18 EMERGENCY WORK LIGHT

Two (2) Fire Research model #LTA530 Telescopic poles with Whelen model # PCP2 Pioneer Plus light heads shall be mounted, one (1) on each side rear of the cab. These lights shall be wired to the chassis electrical system and have individual switches on the left and right pump panels.

5.20 PUMP PANEL LIGHTS

Pump panel controls and gauges will be illuminated by a minimum of three Whelen Model # 500 Clear LED lights installed under a shield. Three (3) shall be mounted on the left side of the pump panel and two (2) on the right side of the pump panel. The shields shall be formed from stainless steel in a channel shape. Outer vertical corners shall be rounded.

One (1) pump panel light shall come on when the pump is shifted into gear from inside the cab. The remaining lights on both sides of the pump panels shall be actuated from a switch located on the left side of the pump panel.

5.21 RECESSED MARKER LIGHTS

Four (4) side marker lights Truck light LED model # 35 (Part # 35375Y) shall be recessed into the rub rails, half on one (1) side of the vehicle and half on the other.

5.22 STOP, TURN AND BACK-UP LIGHTS

Stop/Tail, turn and back-up lights shall be provided with individual fixtures. Lights shall be mounted each side on the rear face of the body compartments with Whelen three (3) light cast aluminum housings. Stop/Tail lights shall be Red Whelen model 60R00BRR, back-up lights shall be Clear Whelen model 60C00WCR and the directional lights shall be an Amber arrow Whelen model 60A00TAR.

CHAPTER 6 – Warning Devices

6.1 HAZARD WARNING LIGHT

A Whelen model TIR6 LED red flashing hazard light shall be installed on the ceiling in the forward section of the cab. The warning light shall turn on when the parking brake is disengaged to alert the driver that there is a open compartment/cab door, un-nested power ground ladder rack, i.e. when the parking brake control is released the light shall activate only if any of the above noted conditions exist.

6.2 WARNING LIGHT SYSTEM

Listed below is a Whelen Engineering flashing LED lighting system that shall be provided which consist of the following:

Zone “A” Upper, (cab roof): One (1) Whelen model #FN72QLED Edge “Ultra Freedom” light bar, length 72", with two (2) front corner red LED's, Eight (8) front LED's (6 Red & 2 White) and two (2) end red LED's. A Whelen PE215 flasher and two (2) #4 EL tubes shall be installed in the front center of the lightbar as a “pre emption” emitter. The emitter shall be operated while in the response mode only and enabled when the parking brake is applied.

Zone “B” Upper & Zone “D” Upper, (left & right, front & rear corners): Both upper front zones shall be covered by the side modules of the lightbar and the upper rear lights.

Zone “C” Upper, (upper rear body): Two (2) Whelen model L31 HRFN L360 series red LED beacons shall be mounted in the upper rear with brush guards. Lights shall have a “cruise light” option wired to the parking lamp-running light circuit.

Zone A Lower, (front of cab): Four (4) Whelen 600 series surface mounted LED flashers, two (2) color red and two (2) color white shall be mounted in a cast housing above the headlights.

Zone B Lower, (right lower side of apparatus): Two (2) Whelen model #50R03ZRR, 500 TIR 6 series surface mounted LED flashers, color red shall be mounted in the rub rail of pumper body one (1) at the beginning of the rub rail and one (1) at the end. Three (3) Whelen M6 series LED surface mounted flashers color red shall be mounted one (1) in the side of the front bumper extension, one (1) in the middle of the cab, and one (1) in the wheel well area of the pumper body. Each light head shall be mounted in a chrome bezel with a gasket.

Zone C Lower, (lower rear body): Four (4) Whelen M6 series LED surface mounted flashers, color red. Each light head shall be mounted in a chrome bezel with gasket.

Zone D Lower, (left lower side of apparatus): Two (2) Whelen model #50R03ZRR, 500 TIR 6 series surface mounted LED flashers, color red shall be mounted in the rub rail of pumper body one (1) at the beginning of the rub rail and one (1) at the end. Three (3) Whelen M6 series LED surface mounted flashers color red shall be mounted one (1) in the side of the front bumper extension, one (1) in the middle of the cab, and one (1) in the wheel well area of the pumper body. Each light head shall be mounted in a chrome bezel with a gasket.

One (1) Whelen model #TAL85 amber LED "Traffic Advisor" mounted on the rear body panel with control head model # TACTRL1A located on the front dash panel near the warning lights switch panel.

6.3 WARNING LIGHT CERTIFICATION

The warning light systems specified shall have a total amperage draw of 45 AMPS with all lights activated in either the "Clearing Right of Way" or the "Blocking Right of Way" mode.

6.4 REMOTE AIR HORN BUTTON

A momentary push button shall be provided on the left hand pump panel to activate the air horn(s).

6.5 INTERIOR DOOR WARNING LIGHTS

The interior panels of each door shall include one (1) red Whelen 500 series Super LED warning light which shall be provided on the inner surface of each cab door. Each light shall activate with a flashing pattern when the door is in the open position to serve as an indicator to oncoming traffic.

6.6 LOAD SEQUENCER

A Kussmaul Model #091-27 load sequencer shall be provided to prevent large spikes or drops in the vehicle's voltage due to the simultaneous activation of multiple high amperage loads.

6.7 AIR HORN WITH SELECTOR SWITCH

Two (2) Grover "Stutter Tone" 1510 chrome air horns shall be furnished. A pressure protection valve shall be installed in-line to prevent loss of all air from the vehicle air brake system. An air/electric horn selector switch shall be provided which will allow either the electric or air horn to be actuated by the horn button on the steering wheel.

6.8 AIR HORN SWITCH

A Linemaster Model 491 momentary foot operated switch to activate the air horns will be installed on the officer's side of the cab.

6.9 BACK-UP ALARM

There shall be an Ecco SA 901 electronic backup alarm provided that shall sound when the truck is placed in reverse. The alarm shall be automatically adjustable and shall maintain a sound level of a minimum of five (5) decibels over the environmental noise level. Sound level range shall be 82 to 107 decibels.

6.10 ELECTRONIC SIREN

A Whelen WS-295HFSA1 PA/Wail/Yelp Siren Amplifier and Control Center shall be provided and installed in the cab on a swivel mount between the driver and officer's positions.

6.11 MECHANICAL SIREN

A Federal model Q2B siren with chrome-plated housing shall be flush mounted in the left side front bumper extension with front and vane grille exposed. One (1) foot switch shall be provided. The foot switch shall be installed on and angled tread plate bracket on the officer's side cab floor.

There shall be two (2) push button electric siren brake controls installed in the cab, one (1) on the officer's side and one (1) on the driver's side. Switches shall be accessible while seated and belted.

NOTE: A Cole Hersee part # 75920-05 master disconnect shall be used to supply the positive power supply to the mechanical siren. The switch shall be installed under the left front bumper and be easy to access for emergency disconnect of the power source to the mechanical siren.

6.12 Q2B SIREN MASTER SWITCH

A master switch shall be provided on the cab dash switch panel which, when switched off, will deactivate the Q2B siren.

6.13 ELECTONIC SIREN SPEAKER

One (1) Whelen Model SA-340STS short round aluminum 100 waft speaker(s) shall be provided and recessed mounted in the right front of the bumper.

CHAPTER 7 – Water Tank and Foam Tank

7.1 500 GALLON WATER TANK: UPF POLY TANK II E

Tank shall be constructed of Amoco-ACCTUF resin. The tank shall have a capacity of 500 U.S. Gallons complete with a lifetime warranty. Markings may be brief but should include a short statement that a warranty exists, the substance of the warranty, its duration, and who to notify if the tank is found to be defective.

The UPF Poly-Tank II E shall be constructed of 1/2" thick PT2E polypropylene sheet stock. This material shall be a non-corrosive stress relieved thermo-plastic, natural in color, and U.V. stabilized for maximum protection.

The booster and/or foam tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the booster tank is fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removal. The transverse swash partitions shall be manufactured of 3/8" PT2E polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" PT2E polypropylene (natural in color) and extend from the floor of the tank through the cover to allow for positive welding and maximum integrity. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments.

7.2 75 GALLON FOAM TANK

A seventy-five (75) gallon foam tank shall be incorporated into the water tank for utilizing Class B National Gold 1% - 3% AFFF-AR foam concentrate. The (75) gallons shall be in addition to the amount of water specified. The fill tower shall be a minimum dimension of 8" x 8" outer perimeter (standard size to be 12" x 12"). The fill tower shall be provided with an easy opening, hinged, latching cover. Within the fill tower shall be an anti-foaming fill pipe. The fill tower shall be constructed to facilitate complete interior flushing as required. The fill tower shall be equipped with a pressure/vacuum vent that enables the tank to compensate for changes in pressure vacuum where filling or withdrawing foam concentrate.

The tank shall be constructed with the proper inlets and suction connections to install a Foam Pro Auto Tank Fill and The Feecon APH-1.5 Around the Pump foam proportioning system.

7.3 OUTLETS

There will be two (2) standard tank outlets: one (1) for tank-to-pump suction line which shall be a minimum of "4" and one (1) for a tank fill line, which shall be a minimum of 1 1/2". A 1" garden hose tank fill shall be included. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank and be capable of withstanding sustained fill rates of up to 1,000 G.P.M.

7.4 SUMP

The sump shall be at the front of the tank and shall be large enough to accommodate two (2) 4" diameter polypropylene tanks to pump pipes that incorporate a dip tube from the front of the tank to the sump location.

The tank shall have an anti-swirl plate located approximately 2-2 1/2" above the sump.

The sump shall be engineered to flow a minimum of 700 GPM free from turbulence causing cavitation of the pump at 1/2 tank capacity.

7.5 CLEAN-OUT PLUG

There shall be a 3" diameter threaded plug located in the bottom of the booster tank sump to provide a drain when cleaning and flushing tank of foreign substances.

7.6 WATER TANK MOUNTING

The tank shall rest on cross members in conjunction with such additional cross-members, spaced at a distance that would not allow for more than 530 square inches of unsupported area under the tank floor. In cases where overall height of the tank exceeds 40 inches, cross-member spacing will be decreased to allow for not more than 400 square inches of unsupported area.

The tank will be isolated from the cross members through the use of hard rubber strips with a minimum thickness and width dimension of .250" x 2.00" and a minimum Rockwell Hardness of 60 durometer. The tank will be supported around the entire bottom outside perimeter and captured both front and rear as well as side-to-side to prevent the tank from shifting during vehicle operation. The tank will have adequate hold down restraints to minimize movement during vehicle operation. If proper retention is not available or incorporated into the apparatus hose floor, an optional mounting restraint system shall be located on top of tank, half way between the front and the rear on each side of the tank. These stops will be constructed of carbon steel having minimum angular dimensions of 3.00" x 3.00" x 250" and shall be approximately 6.00" to 12.00" long. These brackets will incorporate a hard rubber isolating pad with a minimum thickness of .250" affixed on the underside of the angle. The angle will then be bolted to the body sidewalls of the vehicle while extending down to rest on the top outside edge of the upper sidewall of the tank. Internal mounting block design and hose bed floors will be designed so that the floor slat supports extend full width from side wall to side wall and are not permitted to drop off the edge of the tank or in any way come in contact with the individual covers where a puncture could occur. Hose floor loading will support up to 200 lbs. per sq. foot and will be evenly distributed whenever possible. Other equipment such as generators, portable pumps, etc. will not be mounted directly to the tank top. The tank shall be completely removable without disturbing or dismantling the apparatus structure.

7.7 FILL TOWERS

The tanks shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" sheet stock material and shall be a minimum dimension of 8.00" x 8.00" outer perimeter. (Standard size to be 12.00" x 12.00"). Both fill towers shall be located in the left front corner of the tank unless otherwise specified by the purchaser. The tower shall have a 1/4" thick removable screen and a hinged-type cover. Inside the fill tower shall be a combination vent overflow tube. The vent overflow shall be a minimum of schedule 40 polypropylene pipe, with a minimum I.D. of 6" that is designed to run through the tank, and shall be piped behind the rear wheels.

7.8 COVER

The tank cover shall be constructed of 1/2" thick PT2E polypropylene, natural in color, and UV stabilized, to incorporate a multi three-piece locking design to allow for individual removal and inspection. The tank cover shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity.

Each one (1) of the covers shall have hold-downs consisting of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers and shall assist in keeping the covers rigid under fast filling conditions. A minimum of two (2) lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

CHAPTER 8 – Pump, Piping, Foam and Accessories

8.1 FIRE PUMP – HALE “Q-TWO”

The pump shall be a Hale “Q-Two” mid-ship mounted, two-stage pump that complies with all applicable requirements of the latest "Standard for Automotive Fire Apparatus", NFPA Pamphlet 1901, and has a rated capacity of 1,500 GPM.

The pump shall be a Class "A" type and shall deliver the percentage of rated discharge at pressure indicated:

100% of rated capacity at 150 PSI
70% of rated capacity at 200 PSI
50% of rated capacity at 250 PSI
100% of rated capacity at 165 PSI

Pump shall be free from objectionable pulsation and vibration under all normal operating conditions.

8.2 PUMP CONSTRUCTION

The entire pump shall be assembled and tested at the pump manufacturer’s factory. The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 600 PSI. The pump shall be fully tested at the pump manufacturer’s factory to the performance specs as outlined by the latest NFPA Pamphlet No. 1901.

The pump shall be driven by a driveline from the truck transmission.

8.3 PUMP BODY

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

The pump body shall be horizontally split, on a single plane in two sections for easy removal of the entire impeller assembly including wear rings and bearings from beneath the apparatus without disturbing piping or mounting of the pump in the chassis.

The pump shall have two (2) double suction impellers. The pump body shall have two (2) opposed discharge volute cutwaters. No exceptions.

The pump shaft is to be rigidly supported by three bearings for minimum deflection. One (1) high lead bronze sleeve bearing is to be located immediately adjacent to the impeller (on side opposite the gearbox). The sleeve bearing is to be lubricated by a force fed, automatic oil lubricated design, pressure balanced to exclude foreign material. (No exceptions.) The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

There shall be a mechanical seal in place of pump packing. The mechanical seal must be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting. mechanical seal construction shall be a carbon sealing ring, stainless steel coil spring, Viton rubber cup, and a tungsten carbide seat with Teflon backup seal.

8.4 IMPELLERS

The pump impellers shall be hard, fine grain bronze of mixed flow design; accurately machined and individually balanced. The vanes of the impeller intake eyes shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

8.5 IMPELLER SHAFT

The pump shaft shall be heat-treated, electric furnace, corrosion resistant stainless steel to be super-finished. Pump shaft must be sealed with double-lip oil seal to keep road dirt and water out of gearbox. Impeller clearance rings shall be bronze, easily renewable without replacing impeller or pump volute body, and of wraparound double labyrinth design for maximum efficiency. No exceptions.

8.6 THERMAL RELIEF VALVE

A Hale model #TRV-120" thermal relief valve shall be supplied to protect the pump from overheating by automatically relieving water from the pump when water temperature exceeds 120 degrees F. The relief valve shall include a pump panel mounted indicator light.

8.7 PUMP GEARBOX "L" STYLE

The gearbox shall be assembled and tested at the pump manufacturer's factory. No exceptions.

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

The gearbox drive shafts shall be of heat-treated chrome nickel steel and be of at least 2-3/4" in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine. All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel.

Bores shall be ground to size and teeth integrated and hardened. An accurate cut spur design shall be provided to eliminate all possible end thrust. No exceptions.

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

8.8 PUMP SHIFT

Pump shift engagement shall be made by a two-position free sliding collar, air controlled from the cab. An internal locking mechanism shall be provided to insure the collar shall be maintained in ROAD or PUMP position. A spring-loaded locking collar shall be mounted over the valve lever in the cab. Two (2) indicator lights shall be located in the cab adjacent to the pump shift switch. One (1) light, labeled "O.K. TO PUMP" and one (1) to indicate "PUMP ENGAGED".

Another indicator light shall be installed on the pump panel above the hand throttle. These lights shall be labeled "WARNING -- DO NOT OPEN THROTTLE UNLESS LIGHT IS ON". A manual override is to be supplied on the left side pump operator's panel.

8.9 TRANSFER VALVE

The pump shall be equipped with an all bronze waterway transfer valve, capable of switching from one (1) pumping mode to the other with two (2) and one-half turns of the transfer valve control hand wheel. The transfer valve shall be equipped with a positive mechanical indicator to register the position of the transfer valve at all times.

8.10 PRIMER

A Hale model "ESP" environmentally safe oil-less priming system shall be furnished. Nothing but water shall be dumped on the ground. The primer is rigidly attached to the pump transmission. All rotating parts of the pump shall be made of either corrosion resistant anodized aluminum, stainless steel or laminated phenolic. The pump cylinder must be made of aluminum alloy, hard anodized and Teflon coated for corrosion resistance and long life.

A push/pull control located on the pump panel shall operate the combination manual/electric-priming valve. The pump, when dry, shall be capable of taking suction and discharge water with a lift of (10) feet in not more than 60 seconds, through (40) feet of hard suction hose.

8.11 ANODE SYSTEM

Two (2) Hale zinc anodes shall be installed on the pump to aid in the prevention of galvanic corrosion within the pump and associated plumbing. Two (2) anodes shall be supplied, one (1) on the suction side, and one (1) on the discharge side of the pump.

8.12 ENGINE PUMP HEAT EXCHANGER

A single bundle-type coolant-to-water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant.

8.13 PUMP PIPING

All suction and discharge lines shall use Schedule 40 stainless steel pipe. Where vibration or chassis flexing may damage or loosen piping, the pipe shall be equipped with Victaulic couplings. All discharge and gated inlet lines are to drain through individual drain valves. All individual drain lines are to be extended to drain below chassis frame.

All water carrying pressure gauge lines are to be of flexible polypropylene tubing. Gauge lines shall drain when the discharge drain is opened. All suction inlets and discharge outlets shall be equipped with National Standard Threads (NST).

8.14 "MIV" MASTER INTAKE VALVE

Two (2) Hale Master Intake Valves "MIV-E" shall be provided, one (1) on each 6" suction inlet and suction tube behind the pump compartment panel. The MIV shall be hydro tested at 600 PSI allowing full water flow up to rated pump capacity during draft operation.

The manual override for suction mounted valves shall require no special tools, partial disassembly of the valve or apparatus to make an emergency operation.

8.15 LARGE DIAMETER SUCTION INLETS

Two (2) 6" suction inlets shall be provided, one (1) on each side of the apparatus. The 6" suction fittings shall include a removable die cast screen to provide cathodic protection.

Short style suction tubes shall be used to prevent excessive overhang of valves and pump mounted accessories.

Each side suction inlet shall include one (1) TFT 6" N.S.T. x 5" Storz elbow adapter with 5" Storz blind cap with cable.

8.16 2 ½ AUXILIARY INLET

One 2-1/2" gated hydrant inlet shall be furnished on the left side pump panel. The valve shall be a Elkhart recessed behind the panel and shall be provided with a swing control extending through the panel. The valve shall be a three (3) inch ball type with drop out and slow close features. A three (3") inch heavy-duty threaded stainless steel pipe nipple shall be installed from the valve to just outside the pump panel. Pipe shall terminate with a 3" NPT x 2-1/2" NST chrome plated brass female swivel adapter with a chrome plated brass plug and stainless steel chain.

Inlet shall be labeled "AUXILIARY INLET".

8.17 DIRECT TANK FILL (FOAM OPERATION)

One (1) Fire Research "Wise" Auto Fill system shall be supplied and installed on the left side pump panel. The direct tank fill shall be plumbed and valved to supply a minimum of 700 gallons per minute directly into the booster tank. The direct tank fill shall operate in automatic mode or manual mode. The automatic mode shall have the valve operate electrically from the 'Tank Fill' gauge. When the 'Tank Fill' gauge drops to ½ a tank the valve shall open until the tank and gauge reaches full and then the valve shall close. The manual mode would be a back up in case of an electrical failure and would eliminate the valve from opening and closing while not using the direct tank fill inlet in normal fire fighting operations. The system shall utilize a selector switch labeled "Automatic / Manual."

An Elkhart model 40 relief valve shall be supplied and installed into the Direct Tank Fill System.

One (1) 5" storz intake with relief valve, cap and chain shall be supplied and installed on the Direct Tank Fill intake.

Connection shall be labeled "DIRECT TANK FILL".

8.18 MASTER DRAIN

The pump shall be equipped with a manifold drain assembly consisting of a stainless steel plunger in a bronze body with multiple ports. The valve shall be designed so that the pump discharge pressure is used to force the plunger closed. The drain valve control shall be cable operated from the pump operator's panel and is identified as PUMP DRAIN. A master drain valve shall be supplied that shall drain the main pump. The control shall be push-pull on operator's panel. The valve shall be manufactured by Hale.

8.19 LINE DRAINS

A Class One .75" quarter turn ball drain or bleed off valve shall be provided for each gated inlet or discharge outlet. The drain valves shall be recessed behind the panel with the control handle extending through it. They shall be located along the bottom of the side pump panels in a single horizontal row. The drain controls shall be properly labeled. The water discharge from the drain lines shall be routed so it is exhausted below the chassis frame rails.

8.20 TANK TO PUMP LINE

A four (4) inch Elkhart tank-to-pump valve and piping shall be installed between the water tank and the pump. The fire pump shall be capable of flowing a minimum of 700 GPM through the line off of the tank. A check valve shall be installed between the pump and the valve to prevent water from flowing back into the tank.

Valve shall be labeled "TANK TO PUMP".

8.22 TANK FILL

A 2" pump to tank refill line shall be supplied. The piping shall be 2" I.D. with an Elkhart 2" Electric full flow valve. All plumbing shall be stainless steel.

It shall be labeled "TANK FILL".

8.23 DIRECT TANK FILL(GARDEN HOSE)

There shall be one (1) 1.00" direct tank fill terminating at the drivers side pump panel with a brass female garden hose swivel thread adapter and a rubber protective cap. A 1.00" valve with a tee handle control will be provided at the operators pump panel.

The fill will be plumbed to the top of the water tank to eliminate any possible head pressure while in use.

Valve shall be labeled "DIRECT FILL".

8.24 DISCHARGES

All discharges shall be equipped with Elkhart uni-body electric ball valves. Each valve shall be controlled by Elkhart electronic controls with pressure and flow meters. All discharges shall terminate with NST threads. All 2 1/2" discharges shall be plumbed 3" with a 3" Valve and all 1 1/2" discharges shall be plumbed 2" with 2" valves. The 4" discharge shall be plumbed 4" with 4" valve and the 3" deluge gun shall be plumbed 3" with a 3" valve.

One (1) 2 1/2"	Front Bumper Discharge
Two (2) 1 1/2"	Crosslays
One (1) 2 1/2"	Left Pump Panel Discharge
One (1) 2 1/2"	Left Rear Discharge
One (1) 2 1/2"	Right Rear Preconnect
One (1) 2 1/2"	Right Pump Panel Discharge
One (1) 4"	Right Pump Panel Large Diameter Discharge
One (1) 3"	Pump Box Deluge Gun Discharge

8.25 FRONT BUMPER DISCHARGE (CAR FIRE LINE)

One (1) 2-1/2" discharge shall be located on top of the front bumper located to the rightside of the hose tray. A stainless steel Chiksan style, 2-1/2" NST male x 2-1/2" NPT female, 90-degree swivel elbow shall be provided and installed with a 2 1/2" NST X 1 1/2" NST chrome plated brass adapter. Discharge piping shall be 3" Class One high pressure hose with stainless steel fittings.

Discharge shall be labeled "CAR FIRE LINE".

8.26 TWO (2) 1 1/2" PUMP BOX CROSSLAY DISCHARGES

Two (2) 1 1/2" crosslay discharges shall be provided. Each shall terminate with a brass 1 1/2" nst X 2" npt 90 degree chiksan swivel.

Front crosslay discharge shall be labeled "FRONT CROSSLAY".

Rear crosslay discharge shall be labeled "REAR CROSSLAY".

8.27 2-1/2" LEFT PUMP PANEL DISCHARGE

One (1) 2-1/2" discharge located on the left pump panel shall be provided with 2 1/2" National Standard threads. A chrome plated brass 45-degree elbow, a 2 1/2" nst X 1 1/2" nst adapter with chrome cap and chain shall be installed on discharge.

Discharge shall be labeled "NO. 1 DISCHARGE".

8.28 2- 1/2" LEFT REAR DISCHARGE

One (1) 2 1/2" discharge shall be provided at the rear of the hose bed on the left-hand side. A chrome plated brass 45-degree elbow with chrome cap and chain shall be installed on the end of the discharge.

Discharge shall be labeled "LEFT REAR DISCHARGE".

8.29 2 1/2" RIGHT REAR PRECONNECT DISCHARGE

One (1) 2 1/2" discharge shall be provided at the rear of the hose bed on the right-hand side. A chrome plated brass 45-degree elbow with chrome cap and chain shall be installed on the end of the discharge.

Discharge shall be labeled "RIGHT REAR PRECONNECT".

8.30 2-1/2" RIGHT PUMP PANEL DISCHARGE

One (1) 2-1/2" discharge located on the right pump panel shall be provided with 2 1/2" National Standard threads. A chrome plated brass 45-degree elbow, a 2 1/2" nst X 1 1/2" nst adapter, 1 1/2" nst to 3/4" nst booster with chrome cap and chain shall be installed on discharge.

Discharge shall be labeled "NO. 2 DISCHARGE".

8.31 4" RIGHT PUMP PANEL LARGE DIAMETER DISCHARGE

One (1) 4" discharge shall be provided at the right side pump panel. Discharge shall terminate with 4" male NST thread. A 45-degree elbow with a 5" Storz coupler and cap with chain shall be installed on the end of the discharge outlet. The cap shall be a 5" storz to 2 1/2" nst male, 2 1/2" nst female to 1 1/2" nst male, and a 1 1/2" "nst cap.

Discharge shall be labeled "LARGE DIAMETER DISCHARGE".

8.32 DELUGE RISER DISCHARGE

A 3" deluge gun riser shall be installed above the pump terminating in the open pump box bin. The location of the riser shall be shown on the preliminary drawing and approved by the customer. Piping shall terminate to the left of center closer to the pump operators position to avoid interference with the booster reel and exhaust stack. The riser shall feed the TFT Extend-A-Gun gun.

8.33 TFT 18" EXTEND-A-GUN

A TFT 18" Extend-A-Gun shall be supplied and installed on the deluge riser. A 3" 4-bolt ASA flange shall be furnished and installed on the end of Extend-A-Gun to accommodate an Akron model 3423 monitor.

8.34 BOOSTER REEL

One (1) Hannay electric rewind booster reel model 24-25-26 shall be supplied and mounted over the pump on the right side. The reel shall have a capacity of 400 feet of 1" Angus collapsible booster hose. The reel shall not be plumbed to the pump. The rewind button shall be on the left and right side pump panels. There shall be three sided hose rollers on the left and right side over the pump to allow the hose to pay off on each side.

Manual rewind provisions shall be provided with a rewind crank handle.

8.35 HOSE ROLLERS

A three-sided hose roller the width of the booster reel shall be provided and installed on both sides of the apparatus at the top of the pump box for assisting with deployment and rewinding of the booster reel hose.

8.36 FEECON AROUND THE PUMP FOAM PROPORTIONING SYSTEM

One (1) Feecon model # APH-1.5 "Around the Pump" Class B foam proportioning system shall be supplied and installed. A pump panel mounted metering valve shall be included with instruction plate. The system shall flow a max of 1400 gpm @ 1%, 3 % and 700 gpm @ 6 % foam flow.

The system shall be installed to the manufacturer's specifications and capable of performing all flows with National Foam Universal Gold 1%-3% AR-AFFF.

The system shall include valve controls for the following:

- Foam tank to pump – Labeled "FOAM SUPPLY"
- Supply through eductor – Labeled "FOAM EDUCTOR"
- Flush valve – Labeled "FOAM FLUSH"

8.37 FOAM PRO POWER FILL

A Foam Pro "Power Fill" Truck Mounted Foam Concentrate Refill System shall be supplied and installed per manufacturers specifications. The controls, selector valve and pick up port shall be installed on the left side pump panel.

8.38 GREASE MANIFOLD

A grease manifold shall be provided and installed in the pump box for greasing of the Elkhart Electric Valves. Manifold shall consist of a minimum of 15 ports with Zerk style fittings and plumbed with plastic tubing to each Elkhart Electric Valve. Location of manifold will be in the upper left pump box. Final location and placement must be approved by the Fire Department.

CHAPTER 9 – Pump Panel

9.1 PUMP OPERATORS' CONTROL PANEL

Operator's panel is to be located on left side and shall include all valves, controls, and gauges, unless otherwise specified. Both right side and left side panels are to be removable for pump access.

Each right and left pump panel shall be illuminated by LED lights mounted under a stainless steel hood.

These lights are to be Amdor LumaBar 40" LED light strips.

9.2 PUMP ACCESS PANEL

The right side pump panel shall have a pump access door approximately 13" x 40" for inspection and service of the fire pump, vertical exhaust and the tank to pump valve. The door shall be flat stainless steel to match the pump panel and vertically hinged with a "D" ring latch.

9.3 GAUGE PANEL LABELS AND TRIM RINGS

All gauges, discharge outlets, discharge controls, and drains shall be labeled for ease of identification. 'VisionMark' brand etched labels and full size color coded trim rings shall be used. All trim rings shall have a minimum border of 1" color around the perimeter.

The 'VisionMark' labels shall be color-coded, function I.D. and have a clear coat finish.

All labels shall be fastened to the body surfaces using mechanical fasteners and/or attached by adhesive materials. Lettering shall be etched on a color-coded matte surface within the bezel opening.

Discharge and suction opening trim rings shall be Vision Mark brand full size color coded and labeled.

All Elkhart UBEC controllers shall have custom color coded trim rings and function labeled.

9.4 ELECTRONIC PRESSURE GOVERNOR

A Fire Research "In-Control 400" governor system designed to control the engine to maintain a desired pump pressure or engine speed setting shall be provided. This unit shall work with the electronically controlled engine via an electrical control signal to the engine control module.

The unit shall be special ordered with the "pressure" button labeled "PSI".

The unit shall be programmed with the high idle function set at 1,000 RPM when the pump is not engaged.

9.5 TANK LEVEL GAUGES FOAM AND WATER

One (1) Fire Research model #WL-2000 "Tank Vision" kit for water, including display, sensor, and 12" sensor cable, shall be supplied and installed.

One (1) Fire Research model #WL-2600 "Tank Vision" kit for class "B" foam, including display, sensor, and 12" sensor cable, shall be supplied and installed.

9.6 ADDITIONAL SIGHT GLASS WATER LEVEL GAUGE

A sight glass with boiler valves and floating ball with drain (John Ernst Co.) shall be supplied and mounted on the pump panel. Gauge shall match existing Fairfield Fire apparatus.

No exceptions to this section will be allowed or considered.

9.7 PUMP PANEL CONTROLS

Unless otherwise specified, all pump discharge valve controls shall be Elkhart Electric UBEC3 with flow/pressure display and valve position graph.

The following controls and gauges shall be supplied and mounted on the pump panel for convenient operation:

- 9 Elkhart UBEC3 electric combination flow/pressure and valve controllers
- Fire Research Corp. In-Control 400 pressure governor
- Primer control
- Tank fill control- Elkhart UBEC2
- Tank to pump control-Elkhart UBEC3
- Auto tank fill-Elkhart UBEC 1AT
- 6" Master pressure gauge 0-400
- 6" Master vacuum gauge 30-0-400
- Hale- left and right MIV controls
- MIV left and right air bleed controls
- MIV manual override control
- 1/4" NPT Allen head stainless steel pressure and vacuum test plugs with stainless steel housing.
- Hale pump overheat indicator
- Access ports for discharge valve manual overrides
- Stop engine/check engine warning lights and audible alarm
- Auxiliary engine cooler control
- Master pump drain control
- Water level gauge (sight tube)
- Fire Research "TankVision" model #WL2600 "B" foam tank level indicator
- Fire Research "TankVision" model #WL2000 water tank level indicator
- Air horn button
- Engine rpm counter with an engraved label indicating the ratio
- Foam Pro power fill system
- All Feecon foam controls; foam supply, eductor, flush, auxiliary pick up, metering valve
- Right side scene light switch
- Left side scene light switch

9.8 MASTER GAUGES

The master pump pressure and compound gauges shall be a minimum of 6" in diameter and shall have white face with black lettering. The master pressure gauge shall have a pressure range of 0-400 psi and the master compound gauge shall have a pressure range from -30-400 psi. The gauges shall have fluorescent orange tips on the needles.

The master pressure gauge and master compound gauge shall be grouped together on the gauge panel.

9.9 THERMAL RELIEF VALVE

A Hale model #TRV-120" thermal relief valve shall be supplied to protect the pump from overheating by automatically relieving water from the pump when water temperature exceeds 120 degrees F. The relief valve shall include a pump panel mounted indicator light.

CHAPTER 10 – Paint, Lettering and Striping

10.1 PAINT MANUFACTURER & COLORS

The entire apparatus shall be painted with DuPont paint. This includes the cab, chassis, and body.

Dupont Imron 6000 Red (L5539HL) shall be used on entire apparatus, chassis and pump.

Dupont Imron 6000White (L0006HL) shall be used on upper portion of cab.

10.2 CAB PAINT EXTERIOR

The cab shall be painted prior to the installation of glass accessories and all other cab trim.

All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris that may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent. The finish to this procedure shall be a sanding of the cab with 360 grit paper; the seams shall be sealed with SEM brand seam sealer and painted with two (2) to four (4) coats of an acrylic urethane type system.

The cab shall then be painted with the upper and lower colors specifically designated by the customer with a minimum thickness of two (2) millimeters of paint, followed by a clear top coat not to exceed two (2) millimeters.

10.3 CAB PAINT EXTERIOR BREAKLINE

The upper and lower paint shall meet at a break line on the cab which shall fall approximately 1.00 inch under the door windows and above the door handles. The break line shall extend in a straight line and fall approximately 3.50 inches under the windshield and above the windshield wipers on the front of the cab.

10.4 CAB PINSTRIPE

Where the upper and lower paint colors meet a 0.25 inch black pinstripe shall be applied over this break line.

10.5 CAB PAINT INTERIOR

The interior metal surfaces shall be painted with a Zolatone #20-78 dark red texture finish.

10.6 FRONT BUMPER PAINT

The front bumper shall include a finish topcoat painted the same as the lower cab color.

10.7 PUMP COMPARTMENT, PUMP VALVES, HARD PIPING PAINT

The pump, pump compartment, piping and valves shall be painted Dupont job color red.

10.8 FRAME & UNDERCARRIAGE PAINT

The chassis frame, bumper extension, suspension, axles, air tanks, fuel tank, battery boxes, etc shall be painted Dupont job color red along with the following items:

- Pump module-mounting brackets.
- Body mounting brackets.
- Steering gear box and steering link arm.
- Drive shafts.

No exceptions will be allowed.

The following items shall be furnished with the finish as provided by their respective manufacturer:

- Engine, transmission and accessories.
- Exhaust system.
- PTO & hydraulic pump (when furnished).
- Shock absorbers.
- Fuel, oil, coolant filters.
- Air drier and air cleaner.
- Electrical wiring and loom
- Air brake lines, valves and mounting brackets.

10.9 BODY PAINT, PREPARATION AND FINISH

The Dupont Imron brand low VOC polyurethane finishing system shall be utilized.

All exposed welds shall be ground smooth for final finishing of areas to be painted. After final bodywork is completed, grinding (36 and 80 grit), and finish sanding shall be used in preparation for priming.

Priming shall be a two-stage process: The first stage shall be coating with a two-part component, self-etching, and corrosion resistant primer to chemically bond the surface of the metal. The second stage shall be multiple coats of a catalyzed two-component polyurethane, primer surfacer, applied.

NOTE: Three (3) color coats of low VOC polyurethane shall be applied with two (2) to three (3) coats of clear polyurethane over the color coats. The clear coats shall be sanded and buffed to a mirror finish.

All removable items such as brackets, etc. shall be painted separately to insure finish paint behind mounted items.

The underside areas of the complete body assembly shall be undercoated prior to the installation of the body on the chassis.

The interior of the pumper body compartments shall have a "swirled" stainless steel finish.

10.10 SCOTCHLITE STRIPE

A 6” white reflective stripe with a 1” white reflective stripe above and below the 6” stripe shall be provided around the perimeter of the apparatus. The stripe shall be applied on a minimum of 50% of each side of the unit and 25% on the front of the unit to match existing units. The two driver side roll-up doors shall have red striping in place of white.

The right two lower compartment doors shall have a 2” white reflective stripe at the bottom of the doors.

The rear door roll-up door shall also have the 6” white reflective stripe with a 1” white reflective stripe above and below it.

The word “FIRE” shall be incorporated in the 6” striping on both the right and left rear side compartment doors.

All striping shall be scotchlite. The striping shall be of a design that matches the Fairfield Fire Department ENGINE- 1.

10.11 REAR CHEVRONS

The rear of the body shall be covered with 6” alternating reflective stripe chevrons to meet the NFPA standard.

10.12 GOLD LEAF LETTERING AND REFLECTIVE LETTERING

All gold leaf lettering shall be 3” computer generated gold leaf. All other lettering shall be scotchlite. Department seals shall be supplied by the Fairfield FD and installed by the builder.

The drivers and officers doors shall have gold leaf lettering as follows:

FAIRFIELD
FIRE DEPT.

The two crew doors shall have gold leaf lettering as follows:

ENGINE
1

Centered under the windshield shall have gold leaf lettering as follows:

FAIRFIELD

Centered on the front bumper shall have reflective 6” lettering with black outline as follows:

ENGINE

(Engine and the number 1 shall be white scotchlite with black border.)

The word “FIRE” shall be incorporated in the 6” striping on both the right and left rear side compartment doors.

RED scotchlite shall be used in place of the white reflective scotchlite including the striping and the word “FIRE” on the left side natural finish rollup doors.

An 18” White reflective number (1) shall be on the rear roll up door. The number shall incorporate a black border.

Fire Department door seals shall be provided by the Fire Department for installation on the center of the drivers and officers front cab doors.

CHAPTER 11 – Equipment & Mounting (PRICED SEPERATELY)

The following items shall be priced individually and separately in the proposal from the apparatus bid proposal.

11.1 SPANNER WRENCHES AND MOUNTS

Two (2) Kocheck large diameter spanner wrench sets of four (4) and mounting bracket shall be supplied and installed at the rear of the apparatus body and right side pump panel area.

A set of two (2) Kocheck small handline spanner wrenches and one (1) hydrant wrench in mounting bracket shall be supplied and installed in the L-1 compartment.

11.2 IRONS AND MOUNT

A Fire Hooks Unlimited 8 lb. force axe mated with Pro-Bar Haligan bar shall be supplied and installed in the jumpseat area.

11.3 DECK GUN, TIPS AND BASE

One (1) Elkhart Apollo detachable portable monitor and base with two (2) 2 ½” NST female swivel inlets shall be supplied. One (1) set of Elkhart stack tips 1 3/8”, 1 ½”, 1 ¾”, 2” and stream straightener. One (1) deck gun base mounting bracket.

11.4 TFT MASTER STREAM NOZZLE

One (1) TFT M-R1000 – NJ 100 psi master stream nozzle with 2.5 NST swivel inlet.

11.5 TFT FOAM ATTACHMENTS

One (1) TFT FJ-MX-HM
One (1) TFT FJ-LX-HM
One (1) TFT FJ-LX-M
One (1) TFT FJ-H

11.6 TFT AUTOMATIC NOZZLES

One (1) TFT H-V Handline nozzle 95-300 gpm, 100psi, 1.5 NST inlet swivel
One (1) TFT HMD-TO Mid Force nozzle 70-200 gpm, dual pressure 55-100
Two (2) TFT HML-TO Mid Matic 70-200 gpm, 75 psi
Two (2) TFT H-VIT pistol grip shut off with integral tips
Two (2) TFT HM-VPGI Mid Matic 100 psi pistol grip

11.7 TFT TWISTER NOZZLES

Two (2) TFT D1024 Twister 1” nst nozzle.

11.8 ELKHART NOZZLES AND TIPS

Three (3) Elkhart B-278 2.5nst X 1.5nst playpipes
Three (3) Elkhart 187A 1 ¼” Tips
One (1) Elkhart 187A 15/16” Tip
One (1) Elkhart B-275GA 1.5nst X1.5nst pistol grip shut off
Four (4) Elkhart 281A 1.5”nst stream straightner

11.9 AKRON PIERCING NOZZLE

One (1) Akron 1088 3 ft. piercing nozzle

11.10 SUPPLY HOSE

The following lengths of 5” Firequip LDH yellow supply hose with Kocheck locking storz couplings, stenciled Fairfield Fire Department

Fifteen (15) 100 ft. lengths (FIQ5X100LDHY)
One (1) 50 ft. length (FIQX50LDHY)
One (1) 25 ft. length (FIQ5X25LDHY)

11.11 BOOSTER HOSE

The following lengths of 1” Firequip SDH yellow collapsible booster hose with 1” Action couplings stenciled Fairfield Fire Department

Three (3) 100 ft. lengths (FIQ1X100SDHY)
Two (2) 50 ft. lengths (FIQ1X50SDHY)
One (1) 25 ft. length (FIQ1X25SDHY)

11.12 FIRE ATTACK HOSE

The following lengths and sizes of Firequip Commander Supreme attack hose, stenciled Fairfield Fire Department, with Action couplings:

(17) 50 ft. lengths of white 2.5” with 2.5” nst couplings (FIQCS25WB)
(12) 50 ft. lengths of white 1.75” with 1.5” nst couplings (FIQCS17WB)
(4) 50 ft. lengths of blue 1.75” with 1.5” nst couplings (FIQCS17BB)
(8) 50 ft. lengths of yellow 1.75” with 1.5 nst couplings (FIQCS17YB)

11.13 FIRE HOSE

The following lengths of Firequip Combat Master orange hose stenciled Fairfield Fire Department, with Action couplings:

One (1) 100 ft. length of 1.75” with 1.5” nst couplings (FIQCM17OD)
One (1) 50 ft. length of 1.75” with 1.5” nst couplings (FIQCM17OB)

11.14 EQUIPMENT MOUNTING

The following list of Fairfield equipment shall have a mount supplied and installed by the bidder:

Use Ziamatic rubber mounts with stud for the following:

- One (1) Storz adapter 5" X 4"
- One (1) gated "Y" 2 ½ X 1 ½
- Two (2) double male 2 ½
- Two (2) double female 2 ½
- Three (3) 2 ½ threaded adapter
- One (1) 2 ½" male to 1 ½" female swivel
- One (1) 1 ½" X 1" booster

Use Chrome Tri Locks for the following:

- Two (2) 2 ½" Smoothbore play pipe
- One (1) 1 ½" TFT Handline nozzle
- One (1) 2 ½" TFT Master Stream nozzle

Use Velcro Strap for the following:

- One (1) Akron portable deck gun base
- One (1) Angus gated appliance 5" X (3) 2 ½" with relief valve

Use Locking Storz Mount for the following:

- One (1) 5" Storz hydrant elbow

Use a Ziamatic Spring Clip SCBA mount with strap:

- One (1) Scott 4.5 air pack w/ 30 minute bottle (mount on left rear interior cab wall for driver)