



SPECIFICATIONS

FOR A

FIRE RESCUE UNIT

11 Sperti Drive • P.O. Box 17128 • Edgewood, KY 41017
Phone (859) 331 – 0360 Fax (859) 331 - 0399

BID BOND

Bids must be accompanied by a bid guarantee of not less than (10%) ten percent of the total amount of the bid. The guarantee may be in the form of a cashier's check, certified check, bank draft, or an irrevocable letter of credit, or a bid bond issued by a surety company licensed to issue such bonds in this state. Bond shall be issued by the manufacturer, bid bonds by salesperson or agents are not acceptable. NO EXCEPTIONS.

PERFORMANCE BOND

A 100% Performance bond shall be provided within 30 days after receipt of the awarded contract. The performance bond shall be furnished by the bidder of the apparatus proposed. Performance bonds by salesman or agents of manufacturer are not acceptable. NO EXCEPTIONS.

APPROVAL DRAWINGS

There shall be a complete set of drawings that are designed from the specifications and/or any change orders signed by the purchaser before construction begins. These drawings shall indicate the chassis make and model, location of lights, siren, horns, compartments and all major components of the unit. The signed drawings will become part of the contract documents.

CAD DRAWINGS

There shall be a complete set of representation drawings provided with the bid package. These drawings shall indicate the apparatus manufactures ability to design and engineer the apparatus requested.

PRE-CONSTRUCTION CONFERENCE

There shall be a pre-construction conference held prior to any material being cut or sheared by the apparatus manufacture. The location shall be held at a location specified by the fire department. A representative from the manufacturer shall be present to discuss design, engineering and sales information.

INSPECTION TRIPS

The bidder shall provide to the Fire Department transportation, lodging and meals for the committee members for final inspection of the vehicle prior to delivery. NO EXCEPTIONS

DELIVERY

The completed unit shall be delivered to the Fire Department at a destination determined by the fire department.

CHASSIS

MANUFACTURER: International

MODEL: 2008 4400 two door 4 x 2 commercial cab/ chassis

See Chassis specifications section of the bid for complete chassis manufacturers detailed item-by item specifications list.

DROP FRAME

The service requirements of this vehicle dictate that this unit must have the maximum sized compartments possible or available. For that reason we require the frame be dropped, so as to allow maximum compartment depth.

The truck chassis shall be cut and dropped to accept the body. Only highly experienced personnel in this field shall perform the work. The materials and workmanship for frame modifications shall be equal to or greater than the original frame strength of the chassis. Manufacturers proposing alternative frame alteration design will be considered, providing shop drawings are submitted for approval and original strength or greater is certified.

The frame shall be cut and dropped directly behind the cab and extend full length under rear bays with support at rear bumper. All frame modification shall be guaranteed. The original alignment of the axles, wheels, drive shaft, and other components must be guaranteed.

The actual frame main rails shall be 10 inch by 22 Lb. structural channels. The channel shall be reinforced at the connection points with 1/4" inch steel formed plate.

The chassis existing cross members shall be reused in the reconstruction of frame.

The entire chassis frame shall be coated with a black rust prevention coating before the installation of the body on the unit.

In performing the previously described frame modifications, the remaining frame will maintain its original warranty.

BODY MOUNTING SYSTEM

The body mounting system shall feature cross members at the front panel and at each end of the wheelbox for bolting directly to the steel frame, which straddles the frame rails. Mounting should be isolated from the steel frame by other synthetic material.

FRONT BUMPER EXTENSION

The front bumper and frame shall be extended for miscellaneous uses. The frame modification or factory extension shall be capable of adequately supporting a winch at full line pull rating, the weight of a 250-pound person, and/or equipment or hose storage.

A 3/16" bright aluminum tread plate apron shall be installed between the bumper and front face of the cab. Stainless steel screws shall be used to attach the apron to the bumper flange.

BUMPER STORAGE COMPARTMENTS

There shall be three (3) recessed compartments, one (1) located on the right side of the front bumper extension gravel shield, one (1) located on the left side of the front bumper extension gravel shield and one (1) located in the center of the front bumper extension gravel shield. Compartments shall be constructed from smooth aluminum.

The right side compartments shall be constructed large enough to facilitate storage of two hydraulic hose reels with 100' of hydraulic hose and pre-connected hydraulic Rescue Tool.

The center compartment shall be available for hydraulic rescue tool storage up to two tools (pending on type and manufacturer).

The left side compartment shall be designed to support storage of a 100' of DJ fire hose front discharge. Both of the hydraulic reels and hose shall be furnished and installed by manufacturer.

These compartments shall be weather resistant to prevent road debris and moisture from collecting. Compartments shall have tread brite hinged door utilizing a stainless steel continuous hinge. Two (2) D-ring release latches and a center lift handle shall be provided.

Compartment lighting shall be provided to illuminate the interior.

QUICK MOUNT WINCH

A Ramsey Quick Mount winch model QM 9000 shall be provided with the completed unit. The winch shall have a rated line pull of 9,000 lbs. It shall be equipped with a locking pin and 80 of 1/4" galvanized aircraft cable with replaceable clevis hook. The winch shall be equipped with a 24" long quick disconnect battery power lead. At each hitch location a matching electrical connector shall be installed along with a dust/weather cover to protect the truck connection. A Remote control power switch shall be provided on a 12' long cord. Hitch pin shall be provided.

WINCH MOUNTING Front

On the front of the apparatus (chassis), there shall be a 2-inch square receiver hitch installed below the bumper of the unit. It shall be adequately supported to facilitate the use of an electric winch. The receiver location shall be centered under the bumper.

At the hitch location, a matching electrical connector for the winch shall be installed along with a dust/weather cover to protect the truck connection.

WINCH MOUNTING Rear

On the rear of the apparatus (chassis), there shall be a 2-inch square receiver hitch installed below the rear step of the unit. It shall be adequately supported to facilitate the use of an electric winch. The receiver location shall be centered under the rear step.

At the hitch location, a matching electrical connector for the winch shall be installed along with a dust/weather cover to protect the truck connection.

EXHAUST SYSTEM

The exhaust pipe shall not be modified in order to comply with the 2007 emissions standards. The exhaust shall exit on the right side of the unit ahead of the rear wheels.

CHASSIS STEPS

The original steps into the truck shall be removed; new continuous running aluminum tread brite steps shall be installed on both sides.

The fuel tank shall be enclosed with aluminum tread brite. The enclosure shall incorporate the OEM tank step recess and fuel filler. All seams shall be continuously welded.

The step shall be so arranged that a fireperson wearing heavy boots and turnout gear can easily gain access to all cab doors.

The steps shall provide anti-slip protection and shall be constructed of a raised punch aluminum diamond tread plate to facilitate draining of accidentally spilled fuel.

The truck batteries are to be located behind the steps on the left side, easily removable for servicing.

STAINLESS STEEL WHEEL COVERS

A set of four (4) Phoenix stainless steel wheel covers shall be installed on the wheels of the unit, front and rear. Braided stainless air filler shall be installed on rear wheels.

REAR TOW EYES

Under the rear tail board there shall be structural steel reinforcement attached to frame rails of chassis to support tow eye assemblies. Mounted at rear center of apparatus it must be capable to with stand the requirements of towing (not lifting) the apparatus without damage.

REAR MUD FLAPS

There shall be a set of rear anti-spray black mud flaps shall be installed on the rear wheel well.

IDENTIFICATION & WARNING PLATES

FLUID IDENTIFICATION PLATE

A permanently engraved plate shall be installed in the cab specifying the quantity and type of fluids used in the apparatus.

FUEL TYPE PLATE

A permanently engraved plate shall be installed on or near the fuel fill to designate the chassis fuel type.

SEATING LABEL

There shall be a label located in the cab or in view of the driver, stating maximum seating capacity.

VEHICLE HEIGHT LABEL

There shall be a label located in the cab or in view of the driver, stating the overall height of the vehicle.

SEAT BELT WARNING LABEL

There shall be a label located at all seating areas, warning personnel that death or serious injury could result from not wearing seat belts while the vehicle is in motion.

RIDING ON STEP WARNING LABEL

There shall be a label located at all exterior stepping surfaces, stating "Warning: Death or serious injury may result from riding on any stepping surface when the vehicle is in motion.

BODY CONSTRUCTION

Construction material shall be aluminum, fully welded, with no rivets. The roof and wall beams shall be MIG welded to body exterior panels. All dissimilar metals shall have a barrier material between them to prevent electrolysis.

All exterior panels shall be 5052-H32 corrosion resistant aluminum, .125" thickness.

The use of adhesive as a structural fastening system is not acceptable. NO EXCEPTIONS.

On all items that are bolted or fastened onto a painted surface there will be isolation strips installed between mating surfaces. This is to prevent problems associated with dissimilar metals and cutting the painted surface by sharp edge of installed items.

The overall body construction and shelf support shall be welded, NO RIVETS SHALL BE USED NO EXCEPTIONS. The body shall have squared corners with no tapering.

The roof rails shall be of .160" aluminum of 5052-H34 alloys and shall be a continuous formed sheet to "square up" the top of the body to enhance looks and provide a flat mounting surface for lights. Radius type roof rails will not be acceptable.

The bulkheads shall be of .125" aluminum tread brite welded to corner post and header; 3004-H14 alloy.

The roof sheet shall be of .125" aluminum tread brite welded around perimeter; 3004-H14 alloy. The roof shall support a two hundred fifty (250) pound person at any location without damage to the roof.

Partitions shall be .125" aluminum sheet welded to inner framing; 3004-H38 alloy.

All floors shall be .125" smooth aluminum sheet with 3" x .170" channel extrusion reinforcements; 6061-T6 alloy, capable of supporting a five hundred (500) pound load.

All header walls and partitions dividing the compartment shall be of a double wall construction. This method will not only provide extra body strength but also provide a raceway for all wires required for door switches and compartment lighting. Drawings shall be supplied to show details of wall construction. NO EXCEPTION to the double wall construction.

This body channel supports, shall be isolated with a .125" UHMW polyethylene type 819. The isolator shall lay the full length of both sides of frame rails.

There shall be .125" aluminum tread brite installed around the rear wheel well areas. This shall be overlaid and shall be sealed at all seams.

All aluminum body parts are to be welded for unitized construction to give maximum strength throughout the body.

The body mounting system shall feature cross members at the front panel and at each end of the wheel box for bolting directly to the steel frame, which straddles the frame rails. Mounting should be isolated from the steel frame by other

There shall be minimal clearance between cab body and box. Consideration shall be given for the presence of pushup floodlights and any other equipment placed between the cab and body.

The rear bumper shall be impact resistant structural aluminum trimmed out on top and sides with aluminum tread brite. Bumper shall be braced and reinforced to the apparatus body. The bumper shall extend approximately 8" from the body, and be approximately 18 - 20" from the ground to the top of the tailboard, meeting the NFPA 1901 requirements outlined in latest edition of 1901 section 13-7.1. The aluminum treadbrite exterior surface areas designated for stepping or standing shall be punch raised to provide slip resistance when stepping or walking on as outlined in the latest NFPA 1901, section 13-7.2.

All compartments shall be of sweep-out type with no lip at bottom edge. The compartment floors shall be raised 1" above the lower sill to prevent water from entering the bottom of the opening. Each compartment shall be fitted with a drain and located in such a manner as to minimize or eliminate water from entering.

The entire body is to be modular in design; it shall be fully capable of being removed and remount-ed on another chassis.

All welds whether seen or not shall be of good craftsmanship, pleasing appearance. Welds, which are visible, shall be either ground smooth, cleaned or power wire brushed. We are stating that we want Fire Truck quality workmanship not standard delivery practice.

The heights of all shelves and trays shall be easily adjustable by using P-1000 aluminum unistrut, welded permanently to the side bay walls, along with appropriate fasteners. The unistrut is too continuous from the top to the bottom portion of the compartment.

All shelves and trays shall be capable of supporting a minimum weight of two hundred Fifty (250) pounds, even when fully extended. All shelves and trays are to be of .160" smooth aluminum with press formed flanges of 2" on all four sides.

All slide trays shall be on roller mechanisms, which will allow them to extend beyond compartment by ninety percent (90%) of their overall length. An automatic latching system shall be provided to hold the slide trays in their fully retracted and extended positions. The latching system shall be deactivated or unlatched, by simply pulling or pushing the slide tray with approximately 20 lbs. of force. No other latches shall be required to operate the slides, NO EXCEPTIONS.

The entire rescue module will be undercoated prior to mounting on the chassis.

COMPARTMENT CONFIGURATION

The compartment doors shall be of the type-that-rolls up on themselves. The door shall have an adjustable tubular type counter balance which assures easy lifting and lowering of the compartment doors while eliminating the risk of accidental closing.

Doors shall be front roll up style to maximize upper compartment storage.

Door tracks shall be one-piece aluminum extrusions, which have no obstructions to bind the doors. Tracks shall have a replaceable side seal that shall inhibit water and dust from intruding into the compartments.

An aluminum drip rail shall be provided above each door with standard non-abrasive top seals to provide a water and dust barrier to keep compartment equipment clean and dry while maintaining shutter appearance.

Door slats shall be constructed from double wall box frame aluminum extrusion. Slat exteriors shall have a flat surface while the interior surface shall be concave to aid in preventing loose equipment from interfering with roll up operation.

Between each slat shall be a co-extruded inner seal to prevent metal-to-metal contact and to repel moisture from the joints.

Each door slat shall have interlocking joints with folding locking flange and end shoes secured by a swage process. The interlocking end shoes provide tight fitting operation, removing any play between slats and keeping graphics (if applicable) aligned. Shoes are swaged / dimpled (never riveted) into place for easy replacement.

Nested end shoes prevent metal-to-metal contact and protect the shutters from damage as the doors move up and down in the tracks.

Doors shall have a full width lift bar (operable by one hand), shall be used as a positive latch device for securing each individual compartment door in the closed position. All doors shall be equipped with indicator switches to alert the driver that one or more doors are not fully closed. These switches may all be connected to a single flashing warning light on the dash of the cab.

Doors shall be available in an anodized satin or brush finish, or a wet paint finish.

Door Style: R.O.M. Robinson rollup doors

Body Length: 213" (17 feet)

Body Height: 90"

Body Width: 96"

Compartment dimensions of this rescue vehicle are as follows:

Driver Side #L1: **43" wide x 72" high x 24" deep lower / transverse upper**

Driver Side #L2: **26" wide x 72" high x 24" deep**

Driver Side #L3: **60" wide x 43" high x 24" deep**

Driver Side #L4: **48" wide x 72" high x 24" deep & Transverse**

Passenger Side #R1: **43" wide x 72" high x 24" deep lower / transverse upper**

Passenger Side #R2: **26" wide x 72" high x 24" deep**

Passenger Side #R3: **60" wide x 43" high x 24" deep**

Passenger Side #R4: **48" wide x 72" high x 24" deep & Transverse**

Rear #RR 1: **40" wide x 43" high x 48" deep**

HOSE BED

There shall be a NFPA compliant hose storage area provided above the booster tank and below roof top walkway. The floor of the hose bed shall be made of a removable perforated or corrugated aluminum surface, which will aid in hose aeration. The hose bed shall be free from all objects that may pose potential harm or premature wear of the hose stored in it. The hose bed shall be capable of holding a minimum of 1000' of 5-inch hose and 600' of 2 ½ inch hose.

An assisted bi-fold tread plate cover shall be furnished for the hose bed cover. It shall be strong enough to walk on and have either a shock or actuator assist to remove. Acorn nuts shall be used wherever needed so that there is no exposed thread in the hose bed.

HOSE BED COVER

A black hose bed flap shall be furnished to cover the rear facing of the hose bed. It shall have a snap style fastener with a weighted bottom section of the cover.

HOSE BED DIVIDER

There shall be one (1) D.A. sanded aluminum hose bed divider provided and mounted per fire department instructions. Unistrut shall be installed in the hose bed so to allow the hose bed divider to be adjustable.

FOLDING STEPS

There shall be a total of four (4) NFPA compliant folding steps supplied and installed. Two on each side of the unit on the front of the body.

ROOF ACCESS LADDER

A Zico Quic-Ladder shall be installed on the left rear of the body. This ladder shall provide access to the roof of the unit. Ladder shall be constructed of 1-1/4" aluminum tubing, covered between each rung with ribbed neoprene black tubing for a firm grip. The rungs shall be cast aluminum with non-skid-surface. Each rung shall have a 3" Deep x 15" Wide surface area.

Ladder features a positional climbing angle. The ladder stores parallel to the body vertical surface when not in use, but pulls out away from the body and locks into a comfortable angle position for ascending and descending from the rooftop. A quick release handle shall allow the release of the scissor mechanism, which will extend the ladder outward from the body until it locks into its final climbing position.

COMPARTMENT DIVIDER

There shall be Two (2) compartment dividers installed in specified compartment(s). One shall be located in the Drivers side front (L1) compartment, while the other shall be installed in the Drivers side Rear (L4) compartment. Dividers shall be constructed of .188" smooth aluminum with a D.A. sanded finish.

ROOF TOP STORAGE

The body head (roof) rails shall be extended up from the drip channel approximately 32 inches at the front and sides in lieu of the 10 inches of the standard body. The extended head rail shall conceal the boxes for a better appearance. The extended head rail shall run the front down the entire length of the body, and taper at the last 16".

A series of storage compartments shall be constructed on the roof -top of the apparatus. The compartments shall be constructed from 1/8" aluminum treadplate and secured to the roof. The compartment lids shall be reinforced pan 1/8" tread bright aluminum and shall be flanged at least one inch in order to provide increased weather resistance in addition to the rubber door seals.

The doors shall be securely attached to the compartment with full-length stainless steel piano type hinges mounted on the outboard side of the doors. The door shall be mounted to the compartment using stainless steel nuts and bolts. Absolutely no self-tapping screws or pop rivets shall be acceptable on the doors, hinges or slam latch assemblies

The latches for all of the roof compartments shall be D-206 FMVSS standard with paddle or D-ring operations in the walkway wall. No other type of latching will be acceptable.

Gas charged struts shall be installed for door closures for compartment doors. They will assist in opening and closing along with holding the door in a positive open or closed position.

A walkway shall be provided between the roof top storage compartments that extend from the front of the apparatus around to the rear of the body (either side) to create a landing for the accessing ladders. The landing shall be a minimum of 18" by the width of the truck. A grab handle shall be supplied on the end of the side roof compartment(s) to assist personnel when ascending and descending from the roof access ladder(s).

A minimum of four (4) recessed walkway lights shall be installed in the compartments to illuminate the roof top walkway. These lights shall activate along with the underbody ground lights.

The walkway shall meet the NFPA 1901 requirement of non-slip.

To promote water drainage from the roof, water shall be removed using the front drain ducts installed in the front corners of the roof. Water shall be expelled through lines, which terminate below the body. The front transverse box shall be elevated slightly off the rooftop to allow water to reach the drain ducts.

ROOF TOP STORAGE CONFIGURATION

There shall be a series of storage compartments on each side of the roof mounted against the extended head rail. The extended head rail shall conceal the boxes for a better appearance.

Along each side of the head rail shall be a series of storage boxes with top opening lids for large and light item storage. Storage shall be comprised of four storage boxes; Two (2) boxes each sides, approximately 82" long by 26.25" wide originating at the landing and extending toward the front. All four compartments shall be approximately 19" deep.

The box widths leave an approximate 44" walkway in the center of the roof.

The walkway shall actually hinge to provide access to the hose bed storage area below. The walkway shall meet the NFPA 1901 Stepping, Standing and Walking surface requirements as specified in chapter 13, section 13-7 of 1999 NFPA 1901.p.

The boxes shall be securely fastened to the rooftop, by welding or use of stainless fasteners.

ADJUSTABLE SHELF HARDWARE

The compartment(s) indicated shall have extrusions tracks mounted for adjustable shelving. No shelving/slide trays shall be provided in this compartment.

ADJUSTABLE SHELF

The heights of all shelves shall be easily adjustable by using P-1000 aluminum unistrut, welded permanently to the side bay walls, along with appropriate fasteners. The unistrut is to be continuous from the top to the bottom portion of the compartment.

All shelves shall be capable of supporting a minimum weight of three hundred fifty (350) pounds.

All shelves are to be of 3/16" smooth aluminum with press formed flanges of 2" on all four sides and have D.A. sanded finish.

Shelf dimensions shall vary to accommodate the specified compartment for which it is to be mounted.

There shall be (6) adjustable shelves mounted on unistrut as per fire department instruction.

ADJUSTABLE SLIDEOUT TRAY

The heights of all trays shall be easily adjustable by using P-1000 aluminum unistrut, welded permanently to the side bay walls, along with appropriate fasteners. The unistrut is to be continuous from the top to the bottom portion of the compartment.

The trays shall be capable of supporting a minimum weight of three hundred and fifty (350) pounds, even when fully extended.

All trays are to be of 3/16" smooth aluminum with press formed flanges of 2" on all four sides.

All slide trays shall be on roller mechanisms, which will allow them to extend beyond compartment by ninety percent (90%) of their overall length. An automatic latching system shall be provided to hold the slide trays in their fully retracted and extended positions. The latching system shall be deactivated or unlatched, by simply pulling or pushing the slide tray with approximately 20 lbs. of force. No other latches shall be required to operate the slides, NO EXCEPTIONS.

Tray dimensions shall vary to accommodate the specified compartment for which it is to be mounted.

There shall be (1) adjustable slide-out tray(s) mounted on unistrut per fire department instructions.

GRAB RAIL

A grab rail of 1" diameter aluminum extrusion anti-slip grip shall be mounted on the rear of the apparatus one on each side of the rear compartment. Handrail shall meet or exceed the National Fire Protection Associations Pamphlet 1901.

LADDER STORAGE

Above the rear compartment of the rescue body, there shall be a ladder & pike pole storage compartment installed. The compartment shall extend from the rear of the body to the front of the body over top of the tank. Provisions shall be provided to secure the full compliment of NFPA required ladders, as well as an 8, 10 and New York style pike poles.

A tread-brite latch able aluminum access door shall be provided to secure the equipment during transit. The door shall be attached with a stainless steel continuous hinge and incorporate the use of a D ring stainless steel latch.

BREATHING AIR CASCADE SYSTEM

The bidder shall install a fire department supplied breathing air cascade system consisting of four (4) storage bottles, control panel and fill station. This option shall be considered during the pre-construction conference.

PUMP SPECIFICATIONS (Hale Q-Pak)

Due to trying to keep the overall size of the vehicle to a minimum, the size of the pump, and pump house panels must be of important consideration. The entire pump and pump module shall be located behind the cab of chassis and in front of the first body compartment

Pump shall be Hale and of a size and design to mount on the chassis rails of commercial and custom truck chassis, and have the capacity of 1000-gallons per minute (U.S. GPM), NFPA-1901 rated performance, and still be able to maintain an approximate 32" pump panel width.

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 spots as outlined by the latest NFPA Pamphlet No. 1901. Pump shall be free from objectionable pulsation and vibration.

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

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

Pump shaft to be rigidly supported by two bearings for minimum deflection. The bearings shall be heavy-duty, roller or ball bearings in the gearbox and they shall be splash lubricated.

Mechanical seal only required on the inboard side of the pump. The mechanical seal must be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall be a carbon-sealing ring, stainless steel coil spring, and a tungsten carbide seat.

Pump impeller shall be hard, fine grain bronze of the 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.

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

GEARBOX

The gearbox shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive and tail shafts shall be of heat-treated chrome nickel steel and be equipped with an air shift system to select between road and pump when pump is split driveline mounted.

All gears shall be precision ground and of the highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated and hardened to give an extremely accurate gear for long life, smooth, and higher load carrying capability.

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

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

CERTIFICATION

The pump will meet and perform the following test and certification stating, the same shall be issued

100% of rated capacity @ 150# net pump pressure
100% of rated capacity @ 165# net pump pressure
70% of rated capacity @ 200# net pump pressure
50% of rated capacity @ 250# net pump pressure

PRIMING PUMP

The priming pump shall be a positive displacement vane type, electrically driven, and conform to standards outlined in NFPA Pamphlet No. 1901. One priming control shall both start the priming motor, and open the priming valve.

PRESSURE CONTROL MECHANISM

The pump shall be equipped with an automatic pressure control device. A single bronze variable pressure setting relief valve shall provided and be of ample capacity to prevent an undue pressure rise as per NFPA Pamphlet No. 1901. The relief valve shall be normally closed and shall open against pump pressure, with a control light to signal when open. In event of relief valve control failure, the pump is to remain operable for the complete range of the pumps rated capacity, without requiring the closing of any emergency or in case of failure (off/on) valves. (No exceptions.)

MOUNTING

Extra heavy-duty pump mounting brackets shall be furnished. There shall be bolted to the frame rails in such a position to perfectly align the pump so that the angular velocity of the driveline joints will be the same on each end of the drive shaft. This will assure full capacity performance with a minimum of vibration. Mounting hardware shall utilize grade 8 bolts.

AUXILIARY COOLER

An auxiliary cooler or heat exchanger shall be installed in the engine compartment between the engine and the chassis radiator. The cooler shall permit the use of water from the pump for cooling of water circulating through the engine cooling system. This cooling shall be done without mixing engine and pump water.

PLUMBING

Pump plumbing shall utilize a stainless steel manifold system. Discharges and auxiliary inlets shall be plumbed using these manifold systems. Any plumbing connections shall have flexibility to prevent undue stress to the plumbing systems. Victaulic or rubber couplings shall be used where necessary to allow flexing of plumbing, which will prevent damage or loosening of piping. High-pressure hose, rated for the fire industry along with stainless steel connections shall be utilized where necessary.

Pump and plumbing shall meet the standards of the latest NFPA requirements.

VALVES

All intake and discharge shall be Hale brand Torrent stainless steel valves shall be quarter turn, full flow valves. Each valve shall be operated by a control located on the pump panel. Any valve 3 or larger shall be provided with a slow close feature.

STEAMER INLETS

A 5" steamer inlet shall be provided on the left side and right side pump panel. They shall have NST threads and terminate with a screen and long handled chrome cap.

MASTER DRAIN

Master drain that will have the capacity to drain all lines and main pump at the same time. The master drain will be mounted under the running board on the left side of the vehicle for ease of operation.

PUMP MODULE

The pump module shall be a self-supported structure mounted independently from the body and chassis cab. The design shall allow normal frame deflection without imposing stress on the pump module structure of side running boards. The pump module shall be a welded framework utilizing structural components properly braced to withstand the rigors of chassis frame flex. The pump module shall be bolted to the frame rails at four points.

There shall be a dunnage storage area located above the pump. The dunnage area shall be recessed into the pump compartment and shall be constructed of .125" fire apparatus quality aluminum treadbrite.

Aluminum punch raised tread plate running boards shall be installed along both sides of the pump house to provide access to the operator's panel. Running boards shall be separate from the pump house and not be an integral part of a compartment. They shall maintain at least a 1/2 clearance from pump hose. Each step shall be rigidly braced and supported.

PUMP PANELS

The pump house side panels shall be constructed from stainless steel panels and shall be removable in order to access the internal pump house.

Above both side pump panels, there shall be stainless steel hinged access panels to access the pump house. The left side panel or instrument panel shall be horizontally hinged for pump maintenance and gauge inspection. The right side hinged access panel shall be an inspection door. Each panel shall be hinged using a continuous stainless steel hinge and be operated by a two (2) Eberhard style trigger latches.

Controls for pump system will be accessible at the side mounted operators panel.

The upper portion of the both the side operators panel and right side will be formed to extend upward and have stainless steel hood returning forward, thus forming a illumination hood for panel lights. Under this hood there will be three (3) halogen lights with switch located on the pump panel.

The side mount valve controls will be T handle type. The valve control levers will extend through the side panels and be supplied with a twist lock device. The valve control levers will utilize direct linkage and will be uniformly grouped with each respective gauge.

All controls, discharge and suction gauges are to be identified at the gauge and discharge and suction points as well as open-closed positions with identification plates of color background and natural letters.

Pump discharge and suction inlets will extend through stainless steel panels at each side of the apparatus. The 3/4 drain valves for each of the 2-1/2 or larger side discharges will be supplied.

INSTRUMENT PANEL

The instrument panel must contain the following gauges and equipment. These are to be located according to N.F.P.A. 1901 applicable codes.

A Class One Captain Pressure Governor will be supplied on the pump panel. The unit shall regulate the engine speed to maintain a steady pump pressure regardless of the flow rate. Operation shall be changeable from pressure mode to RPM mode and back again if desired while pumping without any pressure variation using the MODE button. Pressure or RPM setting shall be varied using the INCREASE and the DECREASE buttons. A PRESET button allows a preprogrammed pressure or RPM to be set quickly. This preprogrammed Pressure or RPM setting shall be stored in the memory even with the power off. An IDLE button allows for quick shutdown after each operation. EFC shall bring the engine to idle in the event of pump cavitations. It shall resume **operation automatically** once water is available to the pump again.

The Captain shall display the pump Discharge and intake pressure. It shall display pressure in psi up to 600 psi. The Intake pressure display window shall also display the control setting each time a setting is changed; the engine RPM shall be displayed in 10-RPM increments. The visual alarm is not cancelable while the audio alarm shall be cancelable using the SILENCE button. All warnings shall reset automatically when the problems are corrected.

There shall be a 4-1/2" Class one gauge supplied for the master intake and discharge.

A Class One 2-1/2 compound pressure gauge shall be supplied for each discharge 1-1/2 or larger unless otherwise specified. The specified pressure gauge will be located directly be of the liquid silicone filled type. Water pressures and suction gauges will be filled with liquid silicone solution to assure visual reading to with 1% accuracy and function accurately in sub-zero temperatures.

This liquid silicone gauges eliminates the need of snubber valves.

The engine oil pressure, engine water temperature, tachometer, audible and visual warning devices shall be performed by an all in one instrument panel.

A Class One "All In One" instrument panel shall be installed on the pump panel with in easy access of the operator. The All in one module shall eliminate the use of multiple gauges, alarms and warnings to simplify the pump operator's panel. The unit provides a large display for the engine RPM, battery voltage, and display engine oil pressure and coolant temperature. Plus provides visual and external audible warning such as, horn or a bell to identify any monitored failure. Unit also, accumulates and displays engine hours, pump operating hours and incident times.

The throttle and pump in gear indicator will also be installed in the center of the pump operator's panel.

The following instruments and controls will be supplied at the operator's panel:

One (1) -30 x 600 PSI chrome 4 -1/2 main pressure gauge.
One (1) -30 x 600 PSI chrome 4 -1/2 main suction gauge
One (1) 0 x 600 PSI chrome 2-1/2 individual pressure gauges for each 1-1/2 or larger discharge.
One (1) Class One Enfo III instrument panel
One (1) Class One Captain Pressure Governor
One (1) Intelli Tank lighted level water gauge.
One (1) engine cooler control.
One (1) tank fill control.
One (1) pump to tank control.
Pump cooling controls.
Pump discharge controls.
Relief valve control.
Primer control
U.L. test plug panel.

LABELS

Each control and gauge will be clearly marked by a color-coded nameplate, permanently affixed to the operator's panel.

All discharge and suction gauges are to be identified at the gauge and discharge and suction points as well as open-closed positions with identification plates of black background and natural letters.

CROSSLAY

Two (2) pre connect crosslays capable of holding 200 feet of 1.750 hose shall be installed above the operator's panel. These crosslays shall be equipped with 2 swivels and 2 plumbing, high pressure reinforced hose, controlled at the operator's panel. A 2.5 Span SUB-Z compound gauge shall be supplied for each crosslay. The hose bed is to be constructed of aluminum slated flooring for maintenance free service.

TANK TO PUMP 3"

The tank to pump valve shall be a 3" inline Hale Torrent stainless steel valve, installed between the water tank and the pump. Controls for the valve shall be provided on the operators control panel.

TANK FILL 2"

One (1) 2" inline Hale Torrent stainless steel valve shall be supplied off the discharge side of pump and be plumbed into the front head of the tank using high-pressure hose. Controls shall be provided on the operator's panel.

LEFT SIDE DISCHARGES 2-1/2"

There shall be two (2) quarter turn; Hale Torrent stainless steel discharge valve(s) shall be provided behind the left side pump panel. Control for discharge valve shall be provided on operators pump panel.

The discharge(s) shall terminate with a 30-degree elbow with male NST threads, and have a high polished chrome cap with chain. Each discharge is to be equipped with a .750" push/pull drain valve. Drains shall discharge below the running board. The discharge is to have a 2.5" Class 1, Sub ZII compound gauge.

RIGHT SIDE DISCHARGE 2-1/2"

There shall be Two (2) quarter turn 2.5" Hale Torrent, stainless steel discharge valves shall be provided behind the pump panel in the right side pump house. Controls for discharge valves shall be provided on operators pump panel.

The discharge shall terminate with a 30-degree elbow with male NST threads, and have a high polished chrome cap with chain. Each discharge is to be equipped with a .750" push/pull drain valve. Drains shall discharge below the running board. The discharge is to have a 2.5" Class 1, Sub ZII compound gauge.

2" TRASH LINE (Front Bumper Extension)

There shall be a 2" gated discharge outlet furnished at the front of the apparatus in the front bumper extension. The front discharge shall be plumbed with 2 pipes and chrome swivel and terminate with a 1.5" NHT threads. Controls for discharge shall be located at the operator's panel. The discharge is to have a 2.5" Class 1, SUB ZII compound gauge provided at pump operators panel.

Automatic drains shall be provided at all low points in the plumbing.

BOOSTER TANK

The tank shall have a capacity of 500 U.S. gallons complete with a Lifetime Warranty. The tank manufacturer shall mark the tank and furnish notice that indicates proof of warranty. The purpose of the markings and notice is to inform department personnel who store, stock, or use the tank that the unit is under 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.

CONSTRUCTION

The UPF POLY-TANK® shall be constructed of 1/2" thick PT2E™ polypropylene sheet stock. This material shall be a non-corrosive stress relieved thermoplastic, natural in color, and UV stabilized for maximum protection.

The booster tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. All joints and seems 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 removability. 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. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are welded to each other as well as to the walls of the tank.

FILL TOWER AND COVER

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT2E™ polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The tower shall be located in the left front corner of the tank unless otherwise specified by the purchaser in Special Provisions. The tower shall have a 1/4" thick removable polypropylene screen and a PT2E™ polypropylene hinged-type cover. Inside the fill tower, approximately 4" down from the top shall be fastened a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of 4" that is designed to run through the tank, and shall be piped behind the rear wheels where specified by the purchaser in Special Provisions so as to maximize traction.

The tank cover shall be constructed of 1/2" thick PT2E™ polypropylene, natural in color, and UV stabilized, to incorporate a three-piece locking design, which allows for individual removal and inspection if necessary. 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 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 will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2"-13 to accommodate the lifting eyes.

SUMP

There shall be one (1) sump standard per tank. The sump shall be constructed of 1/2" PT2E™ polypropylene and be located in the left front quarter of the tank, unless specified otherwise in Special Provisions. On all tanks that require a front suction, a 3" schedule 40 polypropylene pipes shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall have a minimum 3" N.P.T. threaded outlet on the bottom for a drain plug. This shall be used as a combination clean out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump.

OUTLETS

There will be two (2) standard tank outlets: one for tank-to-pump suction line, which shall be a minimum of 3" N.P.T. coupling; and, one for tank fill line, which shall be a minimum of 3" pipe, N.P.T. coupling. 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 1000 G.P.M. The addition of rear suction fittings, nurse valve fittings, dump valve fittings, and through the tank sleeves to accommodate rear discharge piping must be specified in Special Provisions. All auxiliary outlets and inlets must meet all NFPA 1900 guidelines in effect at the time of manufacture.

MOUNTING

The UPF POLY-TANK® IIE shall rest on the body 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 must be decreased to allow for not more than 400 square inches of unsupported area.

The tank must be isolated from the cross members through the use of hard rubber strips with a minimum thickness and width dimension of 1/4 x 2 and a minimum Rockwell Hardness of 60 durometer. Additionally, the tank must be supported around the entire bottom outside perimeter and captured front and rear as well as side-to-side to prevent tank from shifting during vehicle operation.

Although the tank is designed on a free-floating suspension principle, it is required that the tank has adequate hold down restraints to minimize movement during vehicle operation. The tank shall be completely removable without disturbing or dismantling the apparatus structure.

WATER LEVEL INDICATOR

A Class One Intella-Tank water level system with ultra-brite L.E.Ds for better visibility shall be provided, to monitor the tank water levels. It functions by use of an industrial pressure transducer. Unit self calibrates to any size/shape tank regardless of dimensions and uses pressure sensor, no tank probe to size & maintain. Unit utilizes a one-wire data link for unlimited displays and provides operator with built in diagnostics. System shall utilize ultra-brite LED indicators that shall provide the operator with nine accurate levels of indication. As an added feature the system offers a programmable night dimming.

12 VOLT WIRING GENERAL REQUIREMENTS

All electrical work shall be performed by persons familiar with emergency vehicle systems.

All of the emergency electrical equipment shall be served by circuits separate and distinct from the vehicle chassis circuits.

The 12-Volt DC electrical system shall controlled by an industry proven electrical system.

Clearance and marker lights shall be installed to comply with the NFPA and all Federal standards for highway vehicles. Lights are grommet mounted shock resistant sealed marker lamps series / or sealed LED series marker lamps.

Reflectors shall be installed on the apparatus in compliance with the Federal Motor Vehicle Safety Standards and NFPA 1901.

WIRING REQUIREMENTS

The complete 12-volt wiring system and electrical appliances shall meet NFPA 1901 minimum standards as well as standard automotive practices throughout the installation in the apparatus. The system shall comply with all the appropriate SAE recommended practices such as J1939 and/or J1708.

All required DC power conducting wiring shall be of GXL stranded copper wire of adequate gauge for the function served so as to ensure voltage drop of less than one volt at the appliance under full amperage load.

Body wiring shall be color and function coded, grease, oil and moisture resistant, routed in protective loom through protected locations, neatly and securely fastened, and all apertures properly grommeted for passing wiring. Solderless insulated connectors shall be provided where required. Primary wiring harnesses shall be bench assembled. Where crimp connections are necessary, the connections shall be made using approved connectors with heat shrink insulators. Any wiring routed within proximity of any exhaust components or other high temperature components shall be given special consideration and shielded for best protection.

Any required signal conductors shall be shielded twisted pairs rated by the system manufacturer to carry the multiplex command signals from the switch panel to the control modules.

ELECTRICAL MANAGEMENT SYSTEM

The system installed shall be easily re-programmable and reconfigurable. Most factory authorized service centers or technicians will have on hand all required diagnostic hardware and software required for maintenance of the installed system.

PC DIAGNOSTICS

The system shall incorporate a feature that enables a service representative to troubleshoot, repair and replace nodes in the system, should they for any reason fail. It will be run via a PC interface and will monitor all system information. All messages going across the communications bus must be seen on the screen, including analog information. Each node must be capable of being queried for its own voltage drop and capable of obtaining the status of all inputs and outputs from the diagnostics interface.

The system shall feature the following:

- Total load management
- Load shedding capabilities (will begin load shedding when voltage drops below selected level after a 2 minute period per output.)
- Load sequencing capabilities
- PC Diagnostics
- Error reporting
- Continuous system monitoring and reporting

PC PROGRAMMING

The system must be programmable at the factory in a language that can be downloaded to a remote service representative's PC or down loader tool with all OEM data, as programmed for this specific unit and allow field reprogramming changes as provided by the unit manufacturer.

EMI/RFI PROTECTION

The electrical system proposed shall include means to control undesired electromagnetic and radio frequency emissions. State of the art electrical system design and components will be used to insure radiated and conducted EMI (electromagnetic interference) and RFI (radio frequency interference) emissions are suppressed at their source.

The unit proposed will have the ability to operate in the electromagnetic environment typically found in fire ground operations. The contractor will be able to demonstrate the EMI and RFI testing has been done and meets SAE J551 requirements. Harness and cable routing be given careful attention to minimize the potential for conducting and radiated EMI/RFI susceptibility.

CONTROLS & FUNCTIONS

A switch panel controlling electrical devices and equipment installed on the chassis and body shall be located in the cab within easy access to the driver or centrally located convenient to the driver and/or officer positions. The panel shall include switches arranged in the most convenient and practical manner that is possible.

The panel shall control individually all emergency warning light circuits, which shall also be controlled by warning master switch.

SERVICE AND MAINTENANCE DIAGNOSTIC

Advanced unit service and maintenance will be assisted with an integral software program. The software will provide troubleshooting tools to service technicians to understand diagnostic procedures; failure detection; warning regarding components; System simulation and pinging of nodes for status verification.

All electrical and emergency lighting equipment and circuits not controlled by the electronic management system shall be supplied with automatic reset circuit breakers of appropriate amperage. These circuits shall be operated through a Bosch or equal continuous duty relay to remove load from all switches.

12V DC VOLTAGE OUTPUT TESTING & DOCUMENTATION

The low voltage system of the completed apparatus shall be tested and certified by the manufacturer prior to delivery. A copy of the testing and successful completion will be provided to the purchaser with the in the Owners Manual. Any failures to these tests will require corrective actions to be taken and re-tested before delivery.

RESERVE CAPACITY TEST

The engine shall be started and run until all engine and engine compartment temperatures are stabilized and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for ten (10) minutes. All electrical loads shall be shut down. The battery system shall then be capable of restarting the engine.

ALTERNATOR PERFORMANCE TEST AT IDLE

Minimum continuous electrical load shall be activated while the unit is at idle speed. The engine and engine compartment temperatures are stabilized. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

ALTERNATOR PERFORMANCE TEST AT FULL LOAD

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

LOW VOLTAGE ALARM TEST

The engine shall be shut off and the total continuous electrical load shall be activated and continue to be applied until the excessive battery discharge alarm is activated. The battery voltage measured at the battery terminals with the load still applied must be above 11.7 volts or the test shall be considered a failure and corrective actions employed.

DOCUMENTATION

At the time of delivery an Amp Draw Report Section 13-15 will be completed and provided to the purchaser with the Owners Manual. Documentation shall include:

- Copy of electrical system performance test complying with NFPA 1901,
- Written load analysis with the following information:
- Nameplate rating of the alternator
- The alternator rating under the conditions specified NFPA 1901, section 13.3.2.
- The minimum continuous load of each component specified per NFPA 1901 section 13.3.2
- Additional electrical loads that, when added to the minimum continuous electrical load, determine the total electrical load.
- Each individual intermittent electrical load

BATTERY DISCONNECT SWITCH

A Cole Hersey brand 75908 master battery disconnect switch shall be installed in a convenient location to the driver.

BATTERY LIGHT

A green "battery on" pilot light that is visible from the driver's position shall be provided.

D.O.T. LIGHTING

New stop, tail, back-up lights shall be installed. The type used shall be Whelen brand 6" x 4" rectangular lights, model 600 series L.E.D. mounted on CAST3 housings respectfully.

BACKUP ALARM

An Ecco brand backup alarm shall be installed and shall be activated when the unit is placed in reverse gear.

COMPARTMENT LIGHTS

A 5" diameter interior light shall be installed in all locations where compartment lights are required. All lights shall be mounted in the body so that the adjustable shelves and trays can be easily moved without the moving of the lights and provide adequate illumination. All compartment lights shall be activated as that compartment door is opened.

Minimum of 35 compartment lights shall be installed in the body.

COMPARTMENT OPEN LIGHT

A large red light shall be mounted in the cab visible from the driver and officer's seat.

Each compartment door shall be equipped with a door open indicator switch. When contact is broken at these switches, it shall activate the compartment open light in the cab.

ENGINE COMPARTMENT LIGHT

There shall be one (1) light installed in the engine compartment to illuminate the engine area. There shall be a switch located adjacent to or on the light.

GROUND AREA LIGHTING

There shall be six (6) high intensity water resistant lights mounted under the unit to provide proper ground area illumination in areas designed for the personnel to climb onto or descend from the apparatus.

BATTERY CONDITIONER

There shall be a Kussmaul Auto Charge Super kit installed on the chassis. It shall consist of an Auto Charge1000 120 volt AC battery conditioner with a Super Auto Eject, and remote bar graph.

The battery conditioner (charger) system shall be wired to the chassis batteries and will recharge them to required levels. Conditioner shall provide full 15 amps of output as well as supplying up to 3 amps for loads connected directly to the battery such as radio memory, etc. System shall be connected through a 110 volt shoreline inlet or receptacle located on the cab. A 10 element LED charge indicator shall be mounted on the driver's side of the cab near the shoreline inlet.

The shoreline inlet shall be a Kussmaul Super Auto-Eject input connector with a weather proof, sealed box and cover. Auto Eject is designed to connect a 120-volt AC source to the vehicle. Unit shall automatically disconnect 120 volt AC power source by ejecting plug from the receptacle when vehicle-starting system has been energized. Super eject shall be installed in location to be determined by the fire department.

WARNING LIGHTING - MODES OF OPERATION

There shall be two modes of operation, calling for the right-of-way and blocking the right-of-way. When the master optical; warning system switch is closed, and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for right-of-way shall be energized. When the master optical warning system switch is closed, and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of the right-of-way shall be energized.

LIGHT BAR

A Whelen model FN72LED 72" L.E.D. light bar shall be installed on the cab roof of the unit. There shall be four (4) red corner linear12 L.E.D light heads, and four (4) front linear8 L.E.D light heads. Two (2) red, and two (2) white L.E.Ds.

UPPER ZONE WARNING LIGHTS

A Whelen NFPA 1901 L.E.D. upper zone warning light package shall be installed on the unit.

There shall be a total of six (6) 90R00FRR 900 series L.E.D. and two (2) 70R00FRR surface mount lights mounted on the unit. Each light shall be equipped with a chrome flange. Lights shall be mounted as follows:

There shall be two (2) red 90R00FRR lights mounted on each side in the upper half of the body (zones B & D upper); two (2) red 90R00FRR lights and two (2) red 70R00FRR lights shall be mounted on the rear upper half of the unit (zone C upper)

LOWER ZONE WARNING LIGHTS

A Whelen NFPA 1901 L.E.D. lower zone warning light package shall be installed on the unit.

There shall be a total of ten (10) 60R00FRR 600 series L.E.D. surface mount lights mounted on the unit. Each light shall be equipped with a chrome 6E series flange. Lights shall be mounted as follows:

There shall be three (3) red 60R00FRR lights mounted on each side in the lower half of the unit (zones B & D lower); two (2) red 60R00FRR lights shall be mounted on the rear lower half of the unit (zone C lower); and two (2) red 60R00FRR lights shall be mounted on the front of the apparatus, in the inner headlight housings (zone A lower).

ELECTRONIC SIREN

There shall be one (1) Whelen model WS-295 electronic with noise canceling microphone shall be installed in the cab area.

SPEAKER

There shall be one (1) compact Cast Product SH2015 flush mount speaker with 100-watt driver and a polished finish will be supplied. It will be recessed in the front chassis bumper symmetrically balanced in the front.

AIR HORNS

Two (2) Grover emergency Stutter Tone air horns shall be mounted one (1) each side of the cab hood.

AIR HORN CONTROL

The horns shall be activated by Linemaster brand Model 491-S floor switches. The switches shall be located one on each side of the driving compartment.

SCENE LIGHTS

The unit shall be equipped with six (6) Whelen 810 series 8-32 degree halogen lights. Scene lights shall be surface mounted lights and located two (2) on the right side, two (2) on the left side and two (2) on the rear of the apparatus.

120 VOLT & 240 VOLT

Since the apparatus is equipped with a 120/240-volt electrical system, the wiring and associated equipment shall be tested.

The wiring and associated receptacles shall be subjected to a 1-min, 900-V dielectric voltage withstand test with any switches in the circuit(s) closed between live parts, including neutral and the vehicle frame. This test shall be conducted after all bodywork has been completed.

Electrical polarity checks shall be made of permanently wired equipment and receptacles to determine that connections have been properly made.

An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

The results of the test shall be recorded and provided to the purchaser at the time of delivery.

GENERATOR

The vehicle shall be equipped with a Honda model EM-5000 generator. The generator shall have the capacity of 4,500 watts of continuous power. The generator shall be mounted on a slide out tray located per fire department request.

LOAD CENTER / BREAKER BOX

A minimum six (6) place Square D QO series circuit breaker box / load center shall be installed in the drivers side over wheel well compartment. The breaker box shall be rated at a minimum of 100 amps and supplied with one (1) main breaker rated for the maximum amperage output of the specified generator. Load center shall feature:

- Exclusive shielded copper bus features electro tin plated copper bus bars sandwiched between two rugged polymer shields to insulate and secure the interior.
- Straight-in mains wiring and uniform termination lugs help minimize service cable bends, cutting waste and saving installation time.
- Convertible mains allow fast field conversion between main breaker and main lugs to meet changing job requirements.
- Single, captive interior mounting screw can't be lost. Interior mounts quickly and can easily be removed during rough in for paint or theft protection.
- Split branch neutral with up to 50% more terminations than UL requirement simplifies wiring and reduces clutter.

Specified breakers, as outlined herein, shall be compatible for installation in the box

Circuit breakers shall be Square D type QO (plug-on) thermal magnetic trip, with an integral crossbar to ensure simultaneous opening of all poles in multi-pole circuit breakers. Breakers shall feature:

- An over center, trip free, toggle-type operating mechanism with quick-make, quick-break action and positive handle indication.
- Handles with ON, OFF, and "Tripped" positions. In addition, a trip indication shall be provided on the breakers. The Square D VSI-TRIP indicator appearing in the window of the circuit breaker case.
- Circuit breakers shall be UL Listed in accordance with UL standard 489 with current ratings as noted on the plans. Interrupting ratings shall be selected to provide the required load center short circuit current rating.

Each breaker shall be rated to specified wire size and load demand required for each item operated from load center.

The push up / pull up pole lights shall be hard wired to a single gang box installed in the body, adjacent to each light location. Each gang box shall be furnished with a weatherproof cover and a weatherproof cord grip to isolate the connection from moisture.

ELECTRIC REELS

There shall be one (1) 110-volt Hannay Model ECR-1616-17-18 electric cord reels installed as per the fire department instructions. The reel shall be capable of holding 200 feet of 10/3 wires.

The reels shall also be equipped with a 12-volt electric motor with a sealed push button momentary switch located near that reel in the same compartment. The reels shall also be supplied with 200 feet of 10/3 wires, color to be black.

JUNCTION BOX

There shall be one (1) electrical outlet box, GFE Junction Box that shall be located on the electric cord reel. This shall terminate with four (4) 110-volt outlets.

CAPTIVE ROLLER

There shall be a fairlead at each electric reel(s) location, a retractable captive 4-way roller fairlead shall be provided. These devices shall be so designed as to extend out of the body when the roll-up door is opened. This shall eliminate the cable or hose from rubbing against the exterior painted body surface.

Pulling it out from the body with a web strap shall activate the device. The design shall also not allow the cable or hose to be deployed without the device being swung out.

HYDRAULIC REEL

There shall be two (2) Hannay 2016-17-18 hydraulic hose reel installed in the front bumper extension.

Reels shall be capable of holding 100 feet of twin hydraulic hose. The reel shall also be equipped with a 12-volt electric motor with a sealed push button momentary switch located near the reel in that same compartment. The reel shall also be supplied with 100 feet of twin hydraulic hose, with a working pressure of 10,000 PSI. Choice of colors are Red/Black or Blue/Yellow.

PAINT

The body exterior shall have no mounted components prior to painting to assure full coverage of metal treatments. Compartment doors will be painted separately to assure proper paint coverage on body, doorjamb and door edges.

All painted surfaces shall follow the following procedure to insure a lasting finish.

Metal surfaces shall be sanded to remove all burrs and imperfections in aluminum, before etching and treatment.

A wax & grease solvent shall be used to clean and prep the aluminum surface. The surface shall then be rinsed with freshwater. This step removes wax, grease and other surface contaminants, thus leaving a bright, clean and conditioned surface.

A self-etching, aluminum primer shall be applied next. The self-etching primer shall fill all of the minor imperfections, scratches, etc. in the metal. This step produces a corrosion resisting conversion coating that fends off oxidation and other surface contaminants leaving a surface that gives excellent paint adhesion.

A sandable primer shall be sprayed on the metal that seals the surface for the polyurethane paint. A minimum coating thickness of 2 mil shall be applied. Primer is then sanded smooth leaving the best surface for topcoat.

The apparatus body shall then be painted with a minimum of three (3) coats of high luster final finish polyurethane paint.

These steps are followed as recommended by the paint manufacturer to provide a lasting and high quality gloss finish. All paint products shall be provided by the same manufacture as the topcoat finish.

The body shall be painted to match the (PAINT COLOR & CODE) numbers provided by the Fire Department.

LETTERING

There shall be a maximum of sixty (60) 3" tall 3M reflective gold letters applied to the apparatus. The lettering shall also have left drop shading applied. The exact location of the lettering shall be supplied by the department.

STRIPE

There shall be a 4" wide, white Scotchlite stripe located no higher than 48" from the ground installed on the apparatus cab and body. The stripe shall cover a minimum of fifty percent (50%) of perimeter of each side of the apparatus and fifty percent (50%) of the perimeter of the rear of the apparatus and twenty-five (25%) of the perimeter of the front of the apparatus. The department shall specify the exact location of the stripe.

LIMITED WARRANTY

The body manufacturer shall warrant the new apparatus for a period of twelve (12) months or 12,000 miles (whichever occurs first) from the date of delivery to the original retail purchaser. The warranty will ensure that the vehicle will be free from defects in material and workmanship that may appear under normal use and service within the warranty period. A copy of the warranty shall be supplied with the bid.

PAINT WARRANTY

The body manufacturer shall warrant the new apparatus paint finish for a period of seven (7) years or 84,000 miles (whichever occurs first) from the date of delivery to the original retail purchaser. The warranty will ensure that the vehicle will be free from peeling, cracking, loss of gloss caused by cracking, and any paint failure caused by defective finishes as determined by the manufacturer under normal use and service within the warranty period. A copy of the warranty shall be supplied with the bid.

ELECTRICAL WARRANTY

The body manufacturer shall warrant the new apparatus electrical system for a period of ten (10) years or 100,000 miles (whichever occurs first) from the date of delivery to the original retail purchaser. The warranty will ensure that the vehicle will be free from defects in the electrical harness and connections under normal use and service within the warranty period. A copy of the warranty shall be supplied with the bid.

BODY STRUCTURAL WARRANTY

The body manufacturer shall warrant the new apparatus for structural integrity for a period of twenty (20) years from the date of delivery to the original retail purchaser. The warranty will ensure that the vehicle will be free all structural defects of both material and workmanship that may appear under normal use and service within the warranty period. A copy of the warranty shall be supplied with the bid.

ASSORTED FASTENERS

One (1) bag of assorted stainless steel, and chrome fasteners used in the assembly of the apparatus shall be provided with the delivery of the apparatus.

WIRING SCHEMATICS

A complete set of detailed electrical wiring schematics shall be provided with the completed unit. The schematic shall clearly labeled and describe all electrical circuits for an accurate reference.

SERVICE MANUAL AND PARTS LIST

A service manual shall be provided with the completed unit. Manual shall include equipment and component information as well as warranty and service information.