



City Of Montgomery

Rescue Pumper Specifications

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 10 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.

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. 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. NO EXCEPTIONS.

INSPECTION TRIPS

The successful bidder can expect at least three (3) inspection trips from the City of Montgomery. These trips will be at the expense of the City of Montgomery. The trips will be scheduled for: Pre-Construction Meeting, before body mounting, & final inspection.

There could be more trips by the City of Montgomery if deemed necessary or as requested by contractor. The bidder shall submit to the City of Montgomery a complete schedule of events once the truck starts on the production line.

DELIVERY

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

TRAINING AFTER DELIVERY

Within two (2) weeks after delivery, an appointment shall be made to have a factory representative present to familiarize those persons, designated by the Fire Chief, with the basic operations of the apparatus and its components.

The training program shall be held for three (3) consecutive days, in order to instruct members on all shifts.

There shall be one day of training unique for the mechanics.

The bidder agrees to allow the City of Montgomery to videotape the training for future instructional presentations and reference.

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.

CHASSIS

A custom cab & chassis shall be provided. See chassis specifications section for detail.

STRAIGHT FRAME RAILS

The chassis frame rails shall remain straight and clear rails.

REAR DROP FRAME

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

The truck chassis shall be cut and dropped to accept the enlarged rear compartment. 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.

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 rear drop frame shall be coated with a black rust prevention coating before the installation of the body on the chassis. In performing the previously described frame modifications, the remaining frame will maintain its original warranty.

FRONT BUMPER EXTENSION W/ REEL & TOOL STORAGE COMPARTMENT

The front bumper and frame shall be extended for storage of reel and tool storage. The frame modification or factory extension shall be capable of adequately supporting reels, equipment or tool storage.

The front bumper extension shall be outfitted with an enclosed storage compartment, which consists of three (3) recessed storage areas, or compartments constructed to hold specified hydraulic rescue equipment.

Compartments shall be constructed entirely from aluminum and be enclosed by use of a single tread brite aluminum hinged door utilizing a stainless steel continuous hinge. Two (2) D-ring release latches shall be provided. These compartments shall be weather resistant to prevent road debris and moisture from collecting.

The officer side compartments shall be constructed large enough to facilitate storage of two (2) hydraulic hose reels (*Supplied by the Fire Department*) with a minimum of 100' of hydraulic hose. As referenced in section 9.7.5

The drivers side compartment shall be capable of storing 100 ft. of Pon 1.75" hose, as well as the appropriate nozzle. This hose line shall be pre-connected to the discharge referenced in section 7.4.5

The center compartment shall be a shelf across the frame rails available for hydraulic rescue tool storage. The compartment shall provide adequate space for up to two (2) specified rescue tools pre-connected to reels. As referenced in section 3.5.5

Proper drain holes shall be installed in each of these compartments. A removable screw-type drain plug shall be installed in each drain hole.

There shall be a minimum ground clearance of 16" for all of the compartments in the front bumper.

RAPPELLING ANCHORS

The unit shall be equipped with two anchor points from which the department shall be able to tie off to. Anchor points shall be a removable eyelet, which works with the winch receiver tube style mounting system. Each body eyelet shall be removable by pulling a pin. At each tie in point on the body shall provide a rated support of 600 lbs. and body shall be reinforced to provide a workload rated using a 15:1 safety factor.

EXHAUST SYSTEM

The factory exhaust shall be kept.

REAR MUD FLAPS

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

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.

UNFINISHED WHEELS

The wheels on chassis shall be Aluminum factory-installed wheels as per request of the Fire Department.

RADIO COMPARTMENT / INSTALLATION

There shall be a properly vented compartment suitable for mounting two (2) radios provided in the cab, including access door or panel. Two (2) positive (one fused from the battery and one fused from the ignition switch) and one negative electrical connection shall be provided in the compartment. Location and size to be determined at the pre-construction conference.

Three Radio antennas will be supplied before construction begins. The antennas are to be installed on the cab roof with the cable run to the radio compartment. The radio heads installation location is to be determined at pre-construction conference. The radios shall be supplied by the City of Montgomery.

MAP & STORAGE BOX

A hinged cover shall be supplied for access to the storage area.

A device for mounting the customer street guide shall be installed between the driver and officer seat that will allow the street guide to be turned so either side can view it. The device shall also be capable of being locked. The location and type is to be provided by the City of Montgomery.

A map box shall be provided between the driver and officer. It shall be installed on the top of the engine cover to the rear of the street guide rack. The box shall have six (6) slots spaced on 3" horizontal centers. Each slot shall be 14" wide and 8" deep. They shall slant at a 30-degree angle. The box shall be constructed of .125 aluminum.

EMS CABINET

A custom EMS cabinet to hold EMS supplies shall be constructed and installed in the cab of the unit. It shall be approximately 52" tall x 32" wide x 17" deep. Compartment shall completely enclose. An anodized aluminum roll up access door shall be installed to secure contents during transport.

The location of this cabinet shall be centered against the back wall of the cab. A single track of uni-strut shall be installed on each internal side to allow the movement for adjustable shelves. There shall be two (2) adjustable shelves with formed flanges installed in the compartment.

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 Stainless Steel

Construction material of the body shall be Stainless Steel materials of 12ga, 14ga, and 18ga 304 stainless steel fully welded, with no rivets.

The use of rivets, bolted panels, or adhesive as a structural fastening system is not acceptable.

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

All welds whether seen or not, shall be of good craftsmanship, and 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 entire body is to be modular in design, and shall be fully capable of being removed and remounted on another chassis. The body shall be engineered to provide maximum storage, while maintaining maximum structural rigidity, and long term integrity. The apparatus body structure shall be warranted for twenty (20) years.

The body under-structure shall consist of Stainless Steel formed shapes. The lower outer rails shall be constructed from Stainless steel formed sheet materials.

All floors shall be Stainless Steel sheet with 3" x .170" channel extrusion reinforcements, capable of supporting a five hundred (500) pound load.

The body corner and intermediate Mid-post compartment dividers shall be Stainless Steel welded as an integral part of the body. Serving as a structural load-bearing member, to provide an internal seat from which header and compartment partitions can be secured. The Corner posts shall be heavy duty 4 x 3 5/8 6063-T6 alloy, with .375 wall thickness. Each Mid-post shall be Stainless Steel as shall be each Mid-post.

All exterior panels shall be Stainless Steel the roof and wall beams shall be MIG welded to body exterior panels.

Roof and sidewall panels shall be one piece. The roof rails shall be of Stainless Steel 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. The roof rails shall extend up from the integral drip channel approximately 32" at the front, and sides. Rails shall be formed over to create a flange around the top to give rigidity to the sidewalls.

The roof sheet shall be of Stainless Steel tread plate welded around perimeter. The roof shall support a two hundred fifty (250) pound person at any location without damage to the roof.

The bulkheads shall be Stainless Steel MIG welded to the corner post and header. Partitions shall be Stainless Steel sheet, welded to inner framing of Corner Posts and Mid-posts.

All header walls and partitions dividing the compartment shall be of Stainless Steel wall construction.

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.

All compartment sills shall be overlaid with fire industry grade tread plate aluminum to protect body finish from damage or scratches when accessing the compartments.

The outer lower channels shall be clad with .125" aluminum tread plate. The tread plate shall be installed with a special fastening system. There shall be no welding of this plate.

Both the front and rear exterior walls of the body shall be constructed from Stainless Steel.

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. The rear wheel wells will have a polished fenderette installed on them. A rubber welting will be provided between the body and fenderette to seal the seam and restrict moisture.

The rear tailboard shall be constructed from impact resistant unitized steel, trimmed out in aluminum tread brite and securely mounted to the unit's super structure. It shall be a minimum of 9 deep and approximately 20 from ground to the tailboard. As specified in NFPA 1901-2003 edition sections 15.7. -15.8 the tailboard shall be designed to sustain a minimum static load of 500lbs with out deformation and shall be punch raised to provide skid resistance when stepping. It shall adequately support the stepping and standing of a fire person in full turn out gear but not be used to transport firefighters.

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 synthetic material.

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.

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

All dissimilar metals shall have a barrier material between them to prevent electrolysis.

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 entire body is to be modular in design, it shall be fully capable of being removed and remounted on another chassis. The entire rescue module will be undercoated.

DIMENSIONS

Body Length: 14'-8"

Body Width: 96"

Cab to Axle: 132"

Compartment dimensions of this rescue vehicle are as follows:

Driver Side #1: **53" wide x 60" high x 45" deep**

Driver Side #2: **55" wide x 36" high x Transverse**

Driver Side #3: **55" wide x 60" high x 25.95" deep**

Passenger Side #1: **53" wide x 60" high x 45" deep**

Passenger Side #2: **55" wide x 36" high x Transverse**

Passenger Side #3: **55" wide x 60" high x 25.95" deep**

Rear# 1: **40" wide x 30" high x 24" deep**

DOORS

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.

All door tracks shall have track, post, and track protector in an integral heavy-duty section for added strength. The door track shall be an integral part of the body framework. The door shall be sealed on all sides with black weather stripping. Doors shall be capable of being removed for servicing.

All doors shall be of heavy duty extruded aluminum sectionals; 6063-T6 alloy for finishing purposes.

The door slide system shall consist of a nylon slide with end shoes. They shall slide inside of the aluminum door track.

There shall be no door track liners installed; this will prevent any moisture build up or electrolysis from dissimilar metal contact.

The doors shall have lift bar latches. 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.

ROOF TOP STORAGE CONFIGURATION

The compartments shall be arranged as follows:

There shall be a series of storage compartments on each side of the roof mounted against the extended head rail.

Each box on the rooftop shall be comprised of one compartment on each side approximately 164" long. Each compartment shall be divided into sections with two separate flip up lids per compartment.

Each compartment shall extend inward from the body side approximately 26.25" from the sides leaving a 44" walkway in the center. The compartment depths shall be approximately 18" deep. The boxes shall be securely fastened to the rooftop, by welding or use of stainless fasteners.

ROOF 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.

FLOOR DRY HOPPER

There shall be a smooth aluminum hopper incorporated into the upper roof compartments. It shall be constructed from smooth aluminum and provide approximately 300 Lbs of storage capacity. The floor of the hopper shall slope to a single outlet approximately 3" in diameter.

The 3-inch discharge in the bottom of the hopper floor shall allow a steady flow of floor dry to pass through a gated air operated valve. This valve shall be abrasion resistant and designed for handling solids. Valve shall derive its air from the chassis air system.

Hopper shall terminate with an 8' x 3" flexible of plastic hose.

UNDERBODY COMPARTMENTS

There shall be two (2) slide out underbody compartments mounted one (1) on each side below the forward compartments. They shall approximately 48"W x 6"H x 24"D.

SCBA STORAGE IN WHEEL WELL

There shall be five (5) storage compartments recessed one in each corner of wheel well. The compartment door shall be a latch able brushed aluminum type. Two (2) compartments shall be for SCBA cylinder storage on the officer's side of the apparatus. Three (3) compartments shall be for the storage of fire extinguishers one 2.5 gallon water, one 15lb. dry chem., and one 10 lb. CO2 on the driver side of the apparatus.

WHEEL STEPS

There shall be two (2) stainless steel wheel steps. They shall be removable, spring steel bar steps capable of supporting a minimum of four hundred (400) pounds. They shall not interfere with snow chains.

COMPARTMENT FLOOR TILE

Each compartment floor, all shelving and slide trays in the apparatus body shall have Turtle Tile installed.

ADJUSTABLE SHELF

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

Each shelf 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.

ADJUSTABLE SLIDEOUT TRAY

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

Each tray 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.

ARTICULATING SLIDE TRAY

The articulating tray shall provide easier access to the upper portion of the compartments by allowing the tray to roll outside the compartment and tilt the front of the tray forward and downward to a preset distance providing better visibility and access to the trays contents.

They shall be capable of supporting a minimum weight of two hundred and fifty (250) pounds, even when fully extended.

The tray will be of 3/16" smooth aluminum with press formed flanges of 2" on all four sides. It shall be mounted on roller mechanisms, which will allow them to extend out approximately half its length and shall tilt down approximately 30 degrees.

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

SLIDEOUT TOOL BOARD

All slide out tool boards shall have the capability of lateral adjustments by using P-1000 aluminum uni-strut, welded permanently to the top and bottom of the compartment, along with appropriate fasteners.

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

All tool boards are to be of 3/16" smooth aluminum with a formed full-length handle on front and rear of the board. The board shall be mounted on ball bearing type slides, which shall allow the board to roll out with the capability of locking the board in or out.

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

COMPARTMENT DIVIDER

All compartment dividers installed in specified compartment(s) shall be constructed of .188" smooth aluminum with a D.A. sanded finish. Two (2) channels of uni-strut shall be installed on one side of the divider and run the full length of the divider.

L1 COMPARTMENT (FIRST ROADSIDE COMPARTMENT BEHIND CAB)

This compartment shall contain the following:

Four (4) extruded aluminum tracks mounted for adjustable shelving.

Three (3) adjustable shelf/shelves furnished and installed.

Two (2) heavy-duty slide out tool board(s) shall be furnished and installed.

One (1) aluminum vertical compartment divider(s) furnished and installed.

One (1) fairlead shall be located with the hydraulic reel location.

The cord reel shall be provided with a Daniel Wood head model 3085 outlet box.

L2 COMPARTMENT (ROADSIDE OVER WHEEL WELL COMPARTMENT)

This compartment shall contain the following:

Four (4) extruded aluminum tracks mounted for adjustable shelving.

One (1) articulating slide tray(s) furnished and installed.

L3 COMPARTMENT (ROADSIDE COMPARTMENT BEHIND REAR WHEELS)

This compartment shall contain the following:

Four (4) extruded aluminum tracks mounted for adjustable shelving.

Two (2) adjustable shelf/shelves furnished and installed.

One (1) adjustable slide tray(s) furnished and installed.

R1 COMPARTMENT (FIRST COMPARTMENT BEHIND CAB, CURBSIDE)

This compartment shall contain the following:

Four (4) extruded aluminum tracks mounted for adjustable shelving.

Two (2) adjustable shelf/shelves furnished and installed.

Two (2) adjustable slide tray(s) shall be furnished and installed.

One (1) aluminum vertical compartment divider(s) furnished and installed.

R2 COMPARTMENT (CURBSIDE COMPARTMENT OVER REAR WHEELS)

This compartment shall contain the following:

Four (4) extruded aluminum tracks mounted for adjustable shelving.

One (1) articulating slide tray(s) furnished and installed.

R3 COMPARTMENT (CURBSIDE COMPARTMENT BEHIND REAR WHEELS)

This compartment shall contain the following:

Four (4) extruded aluminum tracks mounted for adjustable shelving.

Two (2) adjustable shelf/shelves furnished and installed.

One (1) adjustable slide tray(s) shall be furnished and installed.

REAR COMPARTMENT

This compartment shall contain the following:

Four (4) extruded aluminum tracks mounted for adjustable shelving.

One (1) adjustable shelf/shelves furnished and installed.

One (1) adjustable slide tray(s) shall be furnished and installed.

Provisions shall be made in this compartment for forward storage of specified ladders.

One (1) Hannay 2016-17-18 hydraulic hose reel(s) shall be furnished and installed.

Two (2) 240-volt electric cord reel(s) with 200 feet of black 10/4 cables shall be furnished and installed.

The cord reel shall be provided with a 240-volt / 120-volt, Circle D electrical outlet junction box model PF-51G-5MI-YEL. There shall be two (2) 120-volt straight plugs and two (2) twist lock NEMA L6-20 240-volt plugs. Receptacles.

HOSE BED

There shall be a NFPA 1901 compliant hose storage area provided over top of the booster tank.

The hose bed shall accommodate 1,000 ft. of 5" supply hose, 300 ft. of 3" Pon hose, as well as 400 ft. of 1-3/4" Pon hose.

The floor of the hose bed shall be made of 3/4" x 3" aluminum hose bed extrusion ribbed on top. The extrusions shall be welded together with 3/4" spacing to vent the hose bed and remain removable. The hose bed shall be free from all objects that may pose potential harm or premature wear of the hose stored in it.

Provisions shall be made to allow the hose to smoothly pay out from the rear of the apparatus without snagging. The hose bed opening shall be covered with a vinyl cover, Royal Blue in color, or as close a match to the blue body stripe as possible. It shall also have the following in white Vinyl 9" letters:
RESCUE 73

An assisted bi-fold tread plate cover shall be supplied as the hose bed cover. It shall be able to support 500 lbs. and act as a walkway. Any device used to assist in penning and closing of the cover must not interfere with the deployment of the hose. Acorn nuts shall be used wherever possible to prevent damage to the hose.

GRAB RAILS

Hand rails of 1 1/4" diameter aluminum extrusion anti-slip grip, shall be mounted on the rear of the apparatus each side on the beaver tail, one horizontally mounted at rear of the hose bed, and one (1) near the control panel to assist the operator onto running boards. Handrail shall meet or exceed-ed the National Fire Protection Associations Pamphlet 1901.

HOSE BED DIVIDER (S)

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

PUMP

The 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 1250 gallons per minute (U.S. GPM), NFPA 1901 rated performance.

The entire pump shall be assembled and tested at the pump manufacturers factory.

The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 PSI. The pump shall be fully tested at the pump manufacturers factory to the performance specs 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 (2069 bar). 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 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 pump without disturbing piping or the mounting of the pump in chassis.

Pump shaft to be rigidly supported by three bearings for minimum deflection. The bearings shall be heavy-duty, deep groove 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 electric furnace chrome nickel steel, Bores shall be ground to size and teeth integrated, shaved, hardened and ground to give an extremely accurate gear for long life, smooth quiet running, and higher load carrying capability. An accurately 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 give maximum performance with the engine and transmission selected.

If gearbox is equipped with a power shift, the shifting mechanism shall be a heat-treated, hard-anodized aluminum power cylinder, with stainless steel shaft. An in-cab control for rapid shift shall be provided that locks in road or pump.

For automatic transmissions, three green warning lights shall be provided to indicate to the operator(s) 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 pump operators panel adjacent to the throttle control. For manual transmissions, one green warning light will be provided for the driving compartment. All lights to have appropriate identification/instruction plates.

The drive unit shall be cast and completely manufactured and tested at the pump manufacturers factory. NO EXCEPTIONS

Pump drive unit shall be of sufficient strength to withstand up to 16,000 lbs. of foot torque of the engine in both road and pump operating conditions. The drive unit shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

GEARBOX

The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2.750" diameter, on both input and output drive shafts. They shall withstand the full torque of the engine in both road and pump conditions.

All gears drive and pump shall be of highest quality electric furnace chrome nickel steel. Bronze shall be ground to size and teeth integrated, crown-shaved and hardened, to give an extremely accurate gear for long life, smooth, quiet running and higher load carrying capability. 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 give maximum performance with the engine and transmission selected.

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 be 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 pump's 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.

As an automatic transmission is furnished, a lock-up assembly shall be installed to prevent the transmission from shifting gears while in the pumping mode.

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 6" 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.

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.

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 tread brite. Dunnage area shall be designed to hold a Hannay electric hose reel with 200' of 1" hose.

Aluminum 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 two (2) 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.

TANK TO PUMP

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

One (1) 1.5" 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

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

There shall be a quarter turn 4" Hale Torrent, stainless steel discharge valve shall be provided behind the pump panel forward in the pump house toward the cab. Control for discharge valve shall be provided on operators pump panel. The discharge shall terminate with a 30-degree elbow with 5" Stortz blind cap and 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

There shall be a quarter turn 2.5" Hale Torrent, stainless steel discharge valve shall be provided behind the pump panel rearward in the pump house toward the body. Control for discharge valve 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.

REAR DISCHARGE

There shall be a 2.5" rear discharge provided, and located in the left rear and right rear of the unit as specified. The discharge shall terminate with a 30-degree elbow with male NST threads and a chrome cap and chain. The discharge is to be equipped with a .750 push/pull drain valve. Drains shall discharge below the tailboard. The discharge is to have a 2.5" Class 1, Sub ZII compound gauge.

2" FRONT DISCHARGE Bumper

There shall be a 2" discharge outlet furnished at the front of the apparatus in the front bumper extension. Outlet shall be gated with a Hale Torrent stainless steel valve. The front discharge shall be plumbed with 2 pipe and terminate with a 1.5 NST swivel. Controls for discharge shall be located at the operator's panel. The discharge is to have a 2.5" Class 1, SUBZII compound gauge provided at pump operators panel.

BOOSTER REEL

There shall be a 1" discharge to the Hannay booster reel above the pump house. The outlet shall be gated with a Hale Torrent stainless steel valve. The discharge shall be plumbed with a 1" high-pressure hose and stainless steel ends. Controls for the discharge shall be located on the operator's panel. The discharge is to have a 2.5" Class 1, SUBZ II compound gauge provided at the pump operators panel.

DELUGE PLUMBING

Plumbing for one (1) 3" deck gun discharge will be installed in the area directly above the pump compartment in the front upper section of the apparatus body. The discharge will be controlled by a 3" inline Hale Torrent stainless steel valve. The discharge is to have male NST threads. The 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. Plumbing shall be capped above the pump house for future installation of department-supplied monitor.

CROSSLAYS

There shall be one (1) divided double cross lay hose bed capable of holding 200 feet of 1.75" hose in each section installed above the pump house. The hose bed is to be constructed of extruded aluminum flooring for maintenance free service. The hose bed divider shall be installed on an aluminum track to allow the department adjustability.

The cross lay shall be equipped with 2" swivels, 2" plumbing, 2" Hale Torrent stainless steel valves and high pressure reinforced hose. Controls for the cross lay shall be provided at the operator's panel. A 2.5" Class 1, Sub ZII gauge shall be supplied for each cross lay.

There shall be one Hannay booster reel # EPF28-25-26 installed on the drivers side of the apparatus above the pump house. The hose reel shall be capable of holding 200 ft. of 1" booster hose. This reel shall be equipped with a Utility Hose Roller from Hannay.

There shall be a compartment installed below the officers side pump panel capable of holding 25 ft. of 5" Pon supply hose as well as a hydrant pack. This compartment shall be slightly sloped toward a drain in the compartment to facilitate constant water removal as necessary.

AUXILIARY COOLER

The pump shall have a 3/8 line installed from the pump discharge to the water tank to cool the pump during long periods of pumping when water is not being discharged. The pump cooler shall be controlled from the pump operators panel by a 3/8 valve consisting of a cast bronze body with 1/4 turn chrome plated bronze ball, reinforced Teflon seals, and blow-out-proof stem rated to 600 PSI. The valve shall be installed through the pump panel and clearly labeled.

THERMAL PROTECTION DEVICE

A thermal protection device shall be included on the pump that monitors pump water temperature and opens to relieve water to cool the pump. The thermal protection device shall be set to relieve water when the temperature of the pump water exceeds 120 o F (49 C).

The components of the thermal protection device shall be manufactured of brass and stainless steel and be compatible with most foam concentrates. The thermal protection device shall have 1-1/4 inch NPT threads for easy adaptability to existing pump discharge openings. The discharge line shall be 3/8 inch diameter tubing vented to atmosphere or back to the booster tank. An indicator light shall be provided on the pump operator's panel. The thermal protection device shall have a hydrostatic test rating of 600 PSIG (41 BAR).

HALE MASTER INTAKE VALVE (ELECTRIC)

The inlet valve shall be a full flow butterfly type valve designed to mount on the fire pump between the suction extension and suction tube behind the pump compartment panel. The valve shall not interfere with other suction or discharge openings on the fire pump or with pump operating controls when properly mounted. The entire valve shall be manufactured and tested at the pump manufacturers factory. The valve body and related components that are in contact with water shall be manufactured of fine-grained corrosion resistant bronze.

The butterfly disc shall be manufactured from 80,000-PSI minimum yield strength heat-treated cast Steel then coated with a durable nitrile rubber to provide a positive seal when the valve is closed. Testing and rating of the valve shall be accomplished at the valve manufacturers factory. The valve,

less relief valve, shall be hydrostatically tested to 600 PSIG (41 BAR). The valve shall then be vacuum tested to 26 inches (660 mm) Hg.

A pressure relief valve shall be provided that is factory set to 125 PSI (9 BAR) and field adjustable from 75 to 250 PSI (5 to 17 BAR). The pressure relief valve shall provide overpressure protection for the suction hose even when the intake valve is closed. An integral relief valve-mounting pad shall be provided on the valve body. The outlet of the pressure relief valve shall have 2-½ inch NPT threads to allow directing the discharge flow away from the pump operator position.

The inlet valve(s) shall be operated by a 12 VDC electric motor with remote capabilities. The 12 VDC motor on the electric operated valve shall be provided with an automatic resetting, thermally compensated, over current protection circuit breaker to protect the 12 VDC motor and apparatus electrical system.

All electrical connections shall use sealed Packard Weather Pack connectors to provide extra protection from the harsh pump compartment environment to ensure long life and reliable operation.

Each valve shall be provided with panel placards indicating control operation. The placards shall have status lights to indicate whether the valve is open, closed or traversing from one position to another. Each valve shall be provided with a gear actuator that will cycle the valve from OPEN to CLOSED position in no less than 3 seconds. The gear actuators shall be sealed units designed to provide reliable service in the harsh pump compartment environment.

The valve body shall have a ¾ inch female NPT threaded port on the top to allow installation of an NFPA compliant large diameter hose air bleeder valve. The air bleeder valve shall be mounted on the operator panel and be controllable by the pump operator. Air bleeder valve connections shall have a restriction no larger than ¾ inch (19 mm) to prevent water hammer when filling hose.

The valve body shall have a ¼ inch female NPT threaded port on the bottom to permit connection of an individual water drain valve.

SUCTION

One (1) 2.5" auxiliary suction Hale Torrent stainless steel valve with chrome female swivels and NST threads shall be provided and be mounted on left side pump panel.

CLASS "A" FOAM SYSTEM Hale

The apparatus shall be equipped with a Hale discharge side foam proportioning system, The system shall be capable of handling Class A foam concentrates and most high viscosity normal hydrocarbon or polar solvent Class B foam concentrates. Foam proportioning operation shall be based on direct measurement of water flow, and remain consistent within the specified flows card pressures.

The two 1-3/4" pre-connect lines shall be connected to the Hale class "A" foam system the class "A" tank is to be 10-gallons and may be incorporated into the water supply tank as a separate tank. The two lines shall be connected to the pump in the following manner. A three-inch pipe off the pump to a check valve and a differential pressure valve, then the line is to be "Y" into the two-inch lines to be run to the valves and hose connections. The control valve and fill valve shall be located on the left side pump panel. The fill valve shall be a quick disconnect for connection with the intake hose.

POLY 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® IIE 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 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 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 ant 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.

PUMP COMPARTMENT LIGHT

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

12 VOLT WIRING

Persons familiar with emergency vehicle systems shall perform all electrical work.

Circuits shall serve all of the emergency electrical equipment separate and distinct from the vehicle chassis circuits. Body wiring shall be color and function coded, grease, oil and moisture resistant, routed in protected locations, neatly and securely fastened, and all apertures properly grommet for passing wiring. Solder less insulated connectors shall be provided where required.

The electrical system shall be completely controlled through a distribution center. The center shall incorporate automatic reset circuit breakers connected to relays to control each electrical circuit. Each circuit breaker and relay shall be sized to the load to be carried.

The 12-volt electrical system shall be controlled through a switch provided in the custom cab in one the available locations that is easily accessible for the driver. The panel shall include switches arranged in the most convenient and practical manner that is possible.

The switch panel shall operate the relays and not carry the circuit load. The panel shall control individually all emergency warning light circuits, which shall also be controlled by warning master switch.

All compartment wiring shall run in conduit and securely fastened.

All heavy ampere-carrying cables requiring terminals shall have the terminals both crimped and soldered for good electrical connections. These circuits shall include the starting charging and siren circuits.

All wiring shall be color-coded and a schematic shall be supplied upon delivery of the truck. The diagram shall represent the exact wiring application, not a proposed system.

The distribution center, relays, strobe power packs and all other control devices shall be located in a convenient location for service.

Body shall be equipped with all lighting as required by Federal Motor Vehicle Safety Standards.

All electrical and emergency lighting equipment shall be supplied with automatic reset circuit breakers of appropriate amperage. All circuits shall be operated through a Bosch or equal continuous duty relay to remove load from all switches.

STOP / TAIL / TURN / BACK-UP LIGHTS

Body shall be equipped with stop, tail, turn and back up lights as required by Federal Motor Vehicle Safety Standards.

New stop/tail, turn and back-up lights, shall be installed according to the FMVSS requirements. The stop, tail, turn light type used shall be Weldon brand 3784 series installed on the rear of the apparatus using a cast aluminum three position housing.

CLEARANCE / MARKER LIGHTS

The apparatus body shall be equipped Truck-Lite brand seal beam marker lights. Lights shall be of the proper color and in accordance with the Federal Motor Vehicle Safety Standards (FMVSS).

A license bracket shall be provided at the rear of the unit with required lighting.

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 23 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.

GROUND AREA LIGHTING Under Body

There shall be four (4) 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 cab.

GROUND AREA LIGHTING Rear

There shall be two (2) high intensity water resistant lights mounted under the unit to provide proper ground area illumination designed for the personnel to climb onto or descend from the apparatus tailboard.

GROUND AREA LIGHTING Front Bumper

There shall be two (2) high intensity water resistant lights mounted under the front bumper extension, to provide additional ground area illumination for those work areas of the side of the apparatus.

LOAD MANAGER

There shall be one (1) Kussmaul Load Manager 1901 automatic load shedding system installed on the unit. The Load Manager 1901 is designed to meet and exceed all the requirements of NFPA 1901. The load manager monitors the vehicles battery voltage so if the voltage drops, outputs are individually deenergized. Load shedding is accomplished in two zones. One zone for lights that may be shed when on the road and the other for lights that may be shed at the scene. Selection of shedding modes is through the parking brake switch or the neutral safety switch.

Whenever the vehicle parking brake is set and "high idle" is selected, a low voltage will produce a high idle output before shedding any loads. High idle will continue for 2 minutes after the voltage rises

to eliminate engine speed cycling. High idle is immediately reset when the high idle switch is turned off or the parking brake released.

A high voltage detector is provided to detect when the sensed voltage exceeds 15 volts. High voltage, low voltage and load shedding set points are individually field adjustable.

Load manager provides a low voltage alarm with time delay.

BATTERY CHARGING RECEPTACLE

The battery charging receptacle location shall be adjacent to its respective battery system.

STREAMLITE

There shall be four (4) Streamlite model 45107 Litebox(s) with 8 watt bulb installed on the (sidewall / specified shelf) of the compartment.

LIGHT BAR

A Whelen model C400700N Centurion 72" light bar shall be installed on the cab roof of the unit. There shall be four (4) 50-watt rotators, two (2) diamond mirrors, and two (2) "V" mirrors. The lenses shall be red, clear, red, clear, red.

LOWER ZONE WARNING LIGHTS

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

There shall be a total of ten (10)-580CAARR 508 series dual halogen surface mount lights mounted on the unit. Two (2) red 508 lights shall be mounted on the grille (zone A lower) three (3) red 508 lights shall be mounted on each side in the lower half of the unit (zone B & D lower), two (2) red 508 lights shall be mounted on the rear lower half of the unit (zone C lower).

There shall be an AF6012 halogen flasher installed to operate all flashing halogen light heads.

UPPER ZONE WARNING LIGHTS

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

There shall be a total of two (2) 580CAARR 508 series dual halogen surface mount lights mounted on the unit. One (1) red 508 light shall be mounted on each side toward the rear of the body on the head rail (zone B & D upper).

There shall be a total of two (2) 810CAAAR 810 series halogen surface mount lights mounted on the unit. These lights shall be amber and be mounted on the rear upper half of the unit (zone C upper). There shall be an AF6012 halogen flasher installed to operate all flashing halogen light heads.

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.

ELECTRONIC SIREN

There shall be two (2) Whelen model WS-295 electronic sirens with noise canceling microphone installed in the cab area accessible by the driver and officer.

SPEAKER

There shall be two (2) compact Cast Product SH2015 flush mount speakers with 100-watt drivers and polished finish will be supplied. They will be recessed in the front chassis bumper symmetrically balanced in the front.

GENERATOR

The generator system shall be a Harrison model 20.0MAS-16R and rated at 20 KW or approved equal. The system shall be designed and assembled by a company with no less than 10 years experience in the manufacture of hydraulic driven systems.

The motor/generator shall be placed in a tray frame assembly which affords protection to the components and provides a unitized mounting module containing motor/generator, reservoir, oil cooler, filtration system, and a manifold containing a cross port check valve plus system relief valve. The generator shall be a commercial type with a heavy-duty bearing and of brush less design to ensure low maintenance. No brushes or slip rings will be allowed. The reservoir shall include an oil level gauge, oil temperature gauge, fill cap, fill strainer, and a boost unit to provide a positive pressure to the pump suction port. The generator and hydraulic motor shall be close coupled and permanently aligned using a Morse taper with a through bolt to secure the motor to the generator. No two bearing generators or shaft coupling devices are allowed.

The system must be capable of producing the rated full-load power when driven from the vehicle PTO from high idle to maximum engine speed.

The hydraulic motor and pump shall be of axial piston design to provide low internal leakage and a high degree of frequency stability. No gear pumps or gear motors are allowed. The pump will match to the system with the proper orifice, pressure compensator and load sensing to provide a stable output over the rated speed range of the pump and with electrical loads from no-load to full-load.

The system shall be capable of normal operations using a commonly available ATF fluid, such as GM DEXTRON II, or equivalent. All fluid service points shall be in close proximity for ease of scheduled maintenance.

When properly installed, the system shall be warranted by the manufacturer for a period of not less than two years or two thousand hours, which ever should come first.

RECEPTACLES

There shall be four (4) duplex 15 amp receptacle(s) installed in the rear wheel well area. The receptacle(s) shall be recessed in the body and be protected by a weatherproof cover. The receptacle(s) are to be 5-15 straight blade, the plug configuration used by the Fire Department.

RECEPTACLES

There shall be two (2) duplex 15 amp receptacle(s) installed in the rear of the body adjacent to each tripod lighting location. Each receptacle shall be recessed in the body and be protected by a weatherproof cover. The receptacle(s) are to be 5-15 straight blade, the plug configuration used by the Fire Department.

RECEPTACLES

There shall be two (2) duplex 15 amp receptacle(s) installed on the rear of the body on either side of the rear compartment. Each receptacle shall be recessed in the body and be protected by a weatherproof cover. The receptacle(s) are to be 5-15 straight blade, the plug configuration used by the Fire Department.

750-WATT FRC QUARTZ LIGHT (FOCUS)

There shall be two (2) FRC Focus FCA100-S75 Low Profile Quartz light head(s) provided. Each light head shall be equipped with a 750-watt quartz bulb, top mounted handle and tilt knob assembly.

Tri-Pod Extension Pole (FRC)

Each light head shall be mounted to a FRC FC-700 tripod. Each tripod features an Air Cushioned pole release to prevent damage to the bulb and pinched fingers and is designed to deploy with just a twist of center pole, allowing the unit to be set up quickly and easily at an incident. Tripod is constructed with lightweight anodized aluminum poles for easier portability. Cammed Tightening knobs are designed such that vibration of the tripod can only tighten the unit's knobs. They cannot loosen in transit.

The pole shall be mounted in such a way to allow the light and pole assembly to be operated while on the truck or to be easily removed from the truck and used as portable light. The light shall be located so as not to interfere with any other lights, doors, or handles.

750 WATT FRC RECESSED WALL MOUNT LIGHT

There shall be two (2) 750 watt 120 volt FRC Focus quartz lights, model FCA200-S75 wall mount quartz lights recessed into the body head rail. Light dimensions shall be 9.75" x 5.625" x 2", and be finished with a powder coat white finish. Each light shall provide even light distribution by focusing 100% of the light to the work area. All lights shall provide quick and simplified bulb replacement from the front by removal of just the lens cover. Lights shall be located as follows: Above compartment #1 on the passenger and driver side of the apparatus.

750-WATT FRC BROW MOUNT LIGHT

There shall be one (1) 750 watt 120 volt FRC Focus quartz light, model FCA800-S75 brow mount quartz light(s) installed on the cab roof. Light dimensions shall be 11.5" x 9.3125" x 5.3125", and be finished with a powder coat white finish. Each light can be preset to desired angles. All lights shall provide quick and simplified bulb replacement from the front by removal of just the lens cover.

LIGHT TOWER

There will be one (1) all weather Command light model CL611 with six (6) 1000-watt fire research lights on the roof of the cab. The light tower shall have the ability to overhang the side of the vehicle, have remote control, and be all electric and maintenance free. The plug for the control box is to be mounted on the left side pump panel. Orientation of the light to be determined by the City of Montgomery.

A protective fairing shall be installed in the front of the Command light to protect it from tree branches or other obstructions.

ELECTRIC REEL (240-VOLT)

Each 240-volt cord reel shall be a Hannay Model ECR-1620-17-18, 240 volt electric capable of holding 200 feet of 10/4 wires shall be provided with the apparatus. Each reel 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.

200 feet of 10/4 wire shall be provide on each reel. Cable color to be black.

JUNCTION BOX

The cord shall terminate with a 20-amp NEMA L14-20 female connector that will match the connector on a junction box.

HYDRAULIC REEL

Each hydraulic reel shall be a Hannay model 2016-17-18 reels capable of holding 100 feet of twin hydraulic hose. Each 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.

100 feet of twin hydraulic hose, with a working pressure of 10,000 PSI shall be provided with each reel. Choice of colors in Red/Black or Blue/Yellow.

CAPTIVE ROLLER

There shall be a fairlead located at each specified reel location. The fairlead shall be a retractable captive 4-way roller fairlead. 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. This device shall be activated by simply pulling it out from the body with a web strap. The design shall also not allow the cable or hose to be deployed without the device being swung out.

PAINT PREPARATION

The body exterior shall have no mounted components prior to painting to assure full coverage of metal treatments. Trim, cover plates, and external equipment being painted job color will be removed and painted separately from the body. All compartment doors (if applicable) 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 other surface contaminants and treatment. The entire unit shall be power washed and dried off. All surfaces shall be air blown dry completely.

A PPG wax & grease solvent shall be used to clean and prep the aluminum surfaces to be painted. The surfaces shall then be rinsed with freshwater and air blown dry. This step removes wax, grease and 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 sand able 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.

Paint Process

The apparatus body shall then be painted with a minimum of two (2) coats of PPG Delta high solids DUHS paint to insure paint depth. Color finish shall be force dried at 120 degrees Fahrenheit. Color coat shall then be spray coated with a minimum of two (2) coats of Delta urethane clear finish.

The finish shall be buffed out to a high luster finish, while removing any dust, or imperfections.

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) supplied by the fire department

LETTERING 4"

There shall be a maximum of sixty (60) 4" tall 3M reflective Royal Blue letters applied to the apparatus. The lettering shall also have left drop shading applied. The department shall supply the exact location of the lettering.

LETTERING 7"

There shall be a maximum of thirty (36) 7" tall 3M reflective Royal Blue letters applied to the apparatus. The lettering shall also have a left drop shading applied. The department shall supply the exact location of the lettering.

STRIPE 10"

There shall be an 10" wide, Royal Blue Scotchlite stripe with two (2) 1" white Scotchlite overlay's 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.

WHEEL CHOCK

There shall be two (2) Zico model SAC-44 wheel chocks with a horizontal hanging bracket shall be mounted in front of the left rear wheels.

FIRE EXTINGUISHER

There shall be one (1) 15 lb. ABC fire extinguisher and a vehicle bracket shipped with the unit.

FIRE EXTINGUISHER

There shall be one (1) 10 lb. CO2 fire extinguisher and a vehicle bracket shipped with the unit.

FIRE EXTINGUISHER

There shall be one (1) 2.5 gallon water fire extinguisher and a vehicle bracket shipped with the unit.

AXE Flat Head

There shall be one (1) 6 lb. flat head fiberglass handle axe supplied and installed with mounting brackets.

HALLIGAN BARS

There shall be two (2) 36' Halligan Bars supplied with the apparatus.

LADDER 24'

There shall be one (1) Duo-Safety 24' two section aluminum extension ladder series 900-A supplied with the unit.

LADDER 14'

There shall be one (1) Duo-Safety 14' aluminum roof ladder series 775-A supplied with the unit.

LADDER 10'

There shall be one (1) Duo-Safety 10' aluminum folding ladder series 585-A supplied with the unit.

PIKE POLE 8'

There shall be one (1) 8' Duo-Safety pike pole with a fiberglass handle supplied with the unit.

PIKE POLE 10'

There shall be one (1) 10' Duo-Safety pike pole with a fiberglass handle supplied with the unit.

NY Hook's

There shall be one (1) 4' New York style roof hook supplied with the unit.

There shall be one (1) 6' New York style roof hook supplied with the unit.

PIKE POLE STORAGE TUBES

There shall be one (1) PVC pike pole storage tube for each pike pole carried on the unit.

APOLLO MONITOR & QUAD TIPS

One (1) Apollo Hi-Rise Dual Inlet Portable and Deck Monitor Part number 3433 shall be supplied with the apparatus.

One (1) Apollo Quad Stacked Deluge Tips Part number 2499 shall be supplied with the apparatus.

HOLMOTRO PUMP Electric

There shall be one (1) Holmotro electric pump model # MPU60 installed in a remote area so compartment space is not lost. Location to be approved by the City of Montgomery. Unit will also have easy access for service. Adequate ventilation for the unit must be provided.

The Holmotro unit will operate three (3) pieces of hydraulic equipment at the same time with no power loss.

There shall be two (2) switches to engage power to the electric pump. One shall be in the front bumper area, the other in the rear #1 compartment. An indicator light shall also be provided to visually confirm pump power. Final location is to be determined by the City of Montgomery.

SPANNER WRENCH SET

There shall be four (4) " Double Holder Set" mounted on the apparatus as specified by the fire department. Each set shall include a holder, and two spanner wrenches.

RATCHETING HYDRANT WRENCH

There shall be two (2) ratcheting Hydrant wrenches with mounting brackets supplied with the apparatus.

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.

EQUIPMENT MOUNTING

All contractor supplied tools shall be mounted per Fire Department instructions.