

SPECIFICATIONS

FOR A

LIGHT RESCUE

F-550 RESCUE TRUCK

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.

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 five (5) years or 60,000 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 ten (10) 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 customer supplied 2008 F-550 4 x 4 chassis shall be provided by the Fire Department. Delivery of the chassis to the body builder shall be the responsibility of the Fire Department.

EXHAUST SYSTEM

The factory exhaust shall be kept as supplied by the chassis manufacturer NO modifications shall be done in order to comply with current emission standards.

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 the full line pull rating, the weight of a 250-pound person, and / or equipment.

A 3/16" polished 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 EXTENSION TOOL BOXES

Installed in the extended front bumper shall be three-recessed, polished aluminum tread plate tool boxes, one located on each side of the frame rails and one located in the center between the frame rails.

The boxes shall be as large as space provides and be equipped with a shoebox style lid and lift and turn latch.

WINCH MOUNTING Front & Rear

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.

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

CHASSIS STEPS

There shall be a set of light duty aluminum tread brite running boards (minimum .190" thickness) installed on the light duty chassis.

The step shall be of a comfortable height for entering or leaving the cab. The steps shall be so arranged so 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.

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 withstand the requirements of towing (not lifting) the apparatus without damage.

CAB CONSOLE

Between the two front seats, a console shall be constructed of .125" aluminum with a D.A. sanded finish.

The console shall have a removable top that will contain the rocker switch panel, siren control head and map / records storage compartment at the rear section.

The base of the console shall house the 12-volt power distribution panel.

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.

REAR MUD FLAPS

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

BODY CONSTRUCTION

Construction material shall be aluminum, fully welded, with no rivets. No Exceptions! The department has no preference to styles of body manufacturing. However the department has provided the following minimum requirements or guidelines from which they will accept.

A detailed specification of the body construction shall be submitted with everyone's proposal. Bidders may be required to provide construction samples of their body for review during the proposal review process.

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

The overall body width shall be approximately 96" and overall body-only height of 74".

All exterior panels shall be 5052-H34 corrosion resistant aluminum. All extrusions shall be 6063 T6 aluminum. Extrusions .125" in thickness or under will not be accepted.

All aluminum body parts are to be welded for unitized construction to give maximum strength throughout the body. Chemical Adhesives not adhesive tape can be used and will be accepted only on non-load bearing walls. The use of adhesive tape or chemical adhesive as a structural fastening system is not acceptable. 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 practices.

On all items that are bolted or fastened onto a painted surface there will be isolation strips and compounds installed between mating surfaces and used with any dissimilar fastener. 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 header walls, and partitions forming and dividing the compartments, plus the compartment floors shall be of .160" aluminum of 5052-H34-alloy construction. No Exceptions!

Compartment floors shall be properly supported, and capable sustaining up to a five hundred (500) pound load.

The roof and wall beams shall be MIG welded to body exterior panels to provide a sturdy rigid structure. The roof rails shall be a minimum of .125" 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. Bodies using cast housings and not providing a flat acceptable surface for mounting of upper scene and warning lights will not be accepted.

The roof rails shall extend up from the top of the compartments a minimum of 10" at the front, rear and sides. A continuous drip rail must be installed above the compartments and run the length of the body sides.

The roof sheet shall be of .160" aluminum tread brite welded around perimeter 3004-H14 alloys.

The body shall be designed and constructed to provide a 48" rear compartment height. The compartment floor shall extend below the frame rails to provide additional storage. The compartment shall be properly supported by utilizing a substructure that ties to chassis frame. A divided rear compartment

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.

Compartment interiors walls shall remain unpainted aluminum finish. The aluminum finish walls shall be easier to maintain, reflect light better to allow you better visibility, and prevent the masking of questionable workmanship with interior coatings. Aluminum treadplate interiors are not to be used.

The heights of all shelves and trays shall be easily adjustable by using a system that is inherent to the compartment partitions. A system of individual mounting locations have been integrated into the compartment side walls providing level and equal shelf and tray support.

Body shall have side compartment access steps integrated into the body structure. Steps shall provide adequate stepping surface for a person to access the upper section of the compartments. Steps shall be integrated into both sides of the wheel well to aid in the accessibility of the over wheel well compartments.

The wheel wells shall have a removable, full poly liner installed. Liner shall provide protection to the over wheel well compartment and prevents, moisture, dirt and road debris from being distributed through out the understructure.

A Cast Product C1180 3 piece aluminum fenderette shall be installed in the fender well. An extruded rubber gasket is to be installed between the fenderette and the body to restrict moisture and or reduce the possibility of electrolysis.

The rear bumper trimmed out on top and sides with 1/8" aluminum tread brite. The bumper shall extend approximately 8" from the body, and be approximately 18 - 20" from the ground to the top of the tailboard, not exceeding the NFPA 1901 requirements outlined in latest edition of 1901.

Rub rails shall be provided for additional protection. They shall be installed along the sides and run the length of the apparatus body below the compartments, only to be interrupted by the wheel wells. Rub rails shall be constructed from (Bright Stainless Steel) formed into a hat section design and mounted to the body using stainless steel fasteners. Rub rails shall be completely removable for replacement. Use of proprietary extrusions as rub rails will not be accepted!

All exterior surface areas designated for stepping or standing shall provide a non-slip resistance surface when stepping or walking on as outlined in the latest NFPA 1901.

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.

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.

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

The entire rescue module will be undercoated. Body is to be completely undercoated before mounting. Undercoating body separate from the chassis ensures better coverage in to the corners and crevices with obstruction from the chassis.

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

COMPARTMENT CONFIGURATION

The compartment doors shall be of the type that rolls up on its self. 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.

The lower door flanges shall have a bright stainless steel scuff plates installed.

UNPAINTED ROLL-UP DOORS

The roll-up doors shall not be painted, leaving a Natural Anodized finish on the roll-up doors.

12' Equipment Body

Body Length 144"

Body Height 70"

Body Width 96"

Cab/Axle 84"

Approximate Compartment Dimensions:

Compartment Location	Width	Height	Depth
Driver Side #1	30"	67"	24" lower, transverse upper
Driver Side #2	30"	67"	24" lower, transverse upper
Driver Side #3	46"	45"	Transverse
Driver Side #4	38"	67"	24" deep
Passenger Side #1	30"	67"	24" lower, transverse upper
Passenger Side #2	30"	67"	24" lower, transverse upper
Passenger Side #3	46"	45"	Transverse
Passenger Side #4	38"	67"	24" deep
Rear #1	48"	48"	38" deep

ADJUSTABLE SHELF

Shelves shall be adjustable using the Select-O-Track Adjustment System incorporated into the body partitions. System allows the shelving to be adjusted up and down the compartment properly maintaining a level surface.

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 nine (9) adjustable shelves mounted as per fire department instructions.

Compartment D-3	One (1) shelf
Compartment D-4	Two (2) shelves
Compartment P-2	One (1) shelf
Compartment P-3	One (1) shelf
Compartment P-4	Two (2) shelves
Rear R-1	Two (2) shelves

FLOOR MOUNTED SLIDEOUT TRAY

The floor-mounted trays shall be capable of supporting a minimum weight of six hundred (600) pounds, even when fully extended.

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

All slide trays shall be on roller mechanisms that 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 two (2) floor mounted slide out tray(s) mounted in the following compartments.

Compartment P-2	One (1)
Compartment P-4	One (1) for the generator.

SLIDEOUT TOOL BOARD

All slide out tool boards shall have the capability of lateral adjustments by using P-1000 aluminum unistrut, 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 that shall allow the board to roll out with the capability of locking the board in or out.

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

There shall be one (1) slide out tool board installed in compartment D-2 with four (4) SCBA brackets to fit the Fire Department SCBA's currently in use.

BACKBOARD STORAGE

There shall be provisions made in a compartment to be specified by the Fire Department at the pre-construction conference.

TOOL MOUNTING

The fire department shall ship or deliver their tools to the body manufacturer. The tools shall have custom brackets fabricated and mounted on one side of the tool board mounted in compartment D-2 for miscellaneous tools.

DUAL DIRECTION SLIDE TRAY

A full compartment width, dual direction slide out tray shall be provided.

The dual direction slide trays are to be of 3/16" smooth aluminum with press formed flanges of 3" on all four sides. Tray slides shall use heavy steel rail construction, and stainless steel ball bearings.

Slide tray shall be accessed from either side of the apparatus. Tray shall extend outward of the compartment 70% of the tray length. Tray shall be able to support up to a 1000 Lbs of distributed weight.

The dual directional slide trays shall be installed in the following compartments:

Compartment D-1 One (1) Tray

Compartment P-1 One (1) Tray

GRAB RAIL

A grab rail of 1" diameter aluminum extrusion with rubber grip's 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.

SCBA STORAGE IN WHEEL WELL

There shall be two (2) SCBA cylinder storage compartments recessed one in each rear corner of wheel well. The compartment door shall be a latchable-brushed aluminum type.

SCBA BOTTLE STORAGE RACK (20 UNIT)

There shall be a SCBA storage unit constructed of all aluminum, and mounted on the floor of compartment D-3. The unit shall be capable of storing up to twenty (20) specified SCBA bottles securely during transport.

The storage unit shall be coated entirely with a rubber-enhanced liner. The liner will protect bottles from superficial injury and minimize any rattling during transport. The use of neoprene liners adhered to the storage unit will not be accepted.

12-VOLT ELECTRICAL SYSTEM REQUIREMENTS GENERAL REQUIREMENTS

Persons proficient in emergency vehicle systems shall perform all electrical work.

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 control by an industry proven electrical system.

All apparatus body clearance lights shall be LED style mounted in rubber grommets in the apparatus body and body lower rails. The lighting shall comply with FMVSS-108 regulations. The apparatus shall also comply with FMVSS regulations for reflectors.

There shall be a license plate bracket with light mounted on the driver side of the apparatus above the warning light.

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.

The system will include, at a minimum, the following attributes and improvements over analog type systems: messages and status indicators.

- On board self diagnostic message and status indicators.
- Minimize use of control relays.
- Provide control for NFPA 1901 mandated interlocks and indicators.
- Utilize system integration to eliminate redundant wiring and components.
- Improve control system reliability by reducing relay and contactor contacts.
- Advanced electrical system load management and sequencing system.
- Imbedded service interval information.
- Customized software programmed to reflect configuration.
- Field re-programmable to accommodate changes to the unit operating parameters.
- Fully Documented hardware.

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. Easy to understand diagnostic procedures.

- Automatic failure detection.
- Appropriate 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:

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

BATTERY DISCONNECT SWITCH

A Cole Hersey brand M-284-01 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.

BRAKE / TURN / BACKUP LIGHTS

There shall be three lights installed on the rear lower 1/3 of each rear side for Brake, Clearance, Turn & Reverse illumination.

Whelen Model 60R00BRR (Stop / Tail) L.E.D.

Whelen Model 60A00TAR Populated Arrow (Turn) L.E.D.

Whelen Model 60J000CR Halogen (Back up)

The lights shall be installed in a quad polished Aluminum bracket with the rear warning light.

BACKUP ALARM

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

COMPARTMENT LIGHTS

The body compartments shall be equipped with low voltage LED, tubular lights. Each light shall be enclosed in a durable and impact resistant lexan shield to protect the lights from inadvertent contact or collision, which may result in damage.

The lights shall be mounted vertically in each compartment where they will not interfere with adjustment or accessibility of any shelving or equipment.

Each light shall be sized accordingly to illuminate the compartment adequately.

COMPARTMENT OPEN LIGHT

A large red light shall be mounted in the cab visible from the driver and officer 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 on the driver's side in a location to be determined by the fire department.

LIGHT BAR

A Whelen model FN60VLED 60" LED light bar shall be installed on the cab roof of the unit. There shall be Four (4) front corner liner12 (red) LED's, Four front linear 8 LED's two red/ two clear.

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.

NFPA COMPLIANT WARNING LIGHTING

The following lighting zone packages have been approved by the selected manufacturers to meet the current NFPA requirements for visual warning devices as outlined in section 11-8.13.3 of the NFPA 1901 Standard for Automotive Fire Apparatus 1999 edition.

LOWER ZONE "A" WARNING LIGHTS (GRILL)

There shall be four (4) 600 series 6" x 4" LEDs installed in lower zone "A."

Two (2) 600 series RED 60R03ZRR L.E.D lights shall be installed on the grill.

Two (2) 600 series Red 60R03ZRR LED lights shall be installed on each side front bumper extension.

LOWER ZONE "B&D" WARNING LIGHTS

There shall be a total of four (4) 600 series 6" x 4" LED lights mounted on the unit.

There shall be two (2) red 60R040RRs L.E.D lights mounted on each side in the lower half of the unit toward the rear (zones "B & D" lower).

Two (2) Red light model 60R02RR L.E.D lights shall be located on each side toward the front lower half of the unit (zones "B & D").

Chrome housings or flanges shall be used in those locations where flush mounting is not available.

LOWER ZONE "C " WARNING LIGHTS

There shall be two (2) model 600 6" x 4" L.E.D lights mounted on the rear of the unit. One shall be Red model 60R00FRR and one shall be Amber model 60A00FAR.

The lights shall be mounted in the quad housings along with the rear DOT light assemblies the rear lower half of the unit (zone "C" lower).

Flash pattern shall be determined by the fire department.

UPPER ZONE "B&D" WARNING LIGHTS

There shall be a total of six (6) 90R00FRR 900 7" x 9" series L.E.D. lights mounted on the unit in upper zones "B&D".

Two (2) red 900 series 7" x 9" L.E.D. lights shall be mounted on each side in the upper half of the unit zones ("B & D") One shall be mounted toward the front and one toward the rear of the apparatus.

Two (2) 900 series 7" x 9" L.E.D. lights shall be mounted on the upper rear of the apparatus upper zone ("C").

ELECTRONIC SIREN

There shall be one (1) Code 3 electronic siren with noise canceling microphone shall be installed in the cab area.

SPEAKER

There shall be one (1) Cast Product SAD 4302 speakers with 100-watt driver and a polished finish will be supplied. The speaker shall be recessed in the front chassis bumper.

SCENE LIGHTS

The unit shall be equipped with six (6) Weldon 7800 series lights with 50-watt halogen bulbs and 26-degree optics to project the light downward.

Scene lights shall be mounted two (2) on the right side, two (2) on the left side and two (2) on the rear of the apparatus.

GENERATOR

The vehicle shall be equipped with a Honda model EM 5000 SXX1 generator. The generator shall have the capacity of 4,500 watts of continuous power. The generator shall be wired to the chassis battery system for starting. Included shall be a quick disconnect for the generator compartment.

The generator shall be mounted on the floor-mounted slide out tray in compartment P-4.

LOAD CENTER / BREAKER BOX

A minimum six (6) place Square D QO series circuit breaker box / load center shall be installed in the rear P-4 compartment with the generator. The breaker box shall be rated at a minimum of 50 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 VISI-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.

OUTLETS

Four (4) duplex 110-volt standard outlets with shall be installed on the apparatus in the following locations. The outlets shall be partially recessed in the body and be protected by a weatherproof cover.

There shall be one (1) mounted in each rear fender panel and one (1) mounted on each side on the rear of the body. Outlets shall be 110-volt 15-amp style used by the Fire Department.

ELECTRIC REEL

One (1) Hannay Model ECR-1646-17-18, 120 volt electric cord reel capable of holding 200 feet of 12/3 S.O cable wire shall be installed in a compartment to be determined at the pre-construction conference.

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

JUNCTION BOX

There shall be one (1) GFE electrical outlet junction box located on the specified electric cord reel. The junction box shall contain a pilot light that shall come on when the box is energized.

The box shall be hardwired on the specified cable, and shall terminate with four (4) 125 volt, 15 Amp outlets. Plug type shall be straight blade as specified by the fire department.

CAPTIVE ROLLER

There shall be a fairlead located at the 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. Activation of the device shall be by simply pulling it out from the body with the attached web strap.

This design shall also not allow the cable or hose to be deployed without the device being swung out.

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, doorjambs 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 a single color to match the (Paint Color and Code No.) of the chassis or an alternate (Paint Color and Code No.) that is to be supplied by the Fire Department.

REPAINT CHASSIS

The factory white painted chassis shall be sanded and prepared for repaint. Paint (Color and Code No.) shall be specified by the fire department.

LETTERING

There shall be Smart Gold lettering applied to the apparatus lettering shall also have a black left drop shading applied.

The lettering shall be as follows.

Cab Doors. **POSEY TWP**
 FIRE DEPARTMENT

Side of Cab Hood. **RESCUE # #**

Upper Body Sides Rails. **FIRE / RESCUE**

STRIPE

There shall be a reflective Scotchlite band located on the apparatus cab and body. The band shall be per the Fire Department size, design and color specifications.

The reflective band shall be in compliance with current NFPA requirements.

DECALS

There shall be one (1) reflective "**STAY BACK 500 FEET**" decal supplied and installed on the rear of 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.