Elizabeth Fire Department

SVI Fire & Rescue Trucks

INSURANCE

Bidder shall furnish with the bid, one (1) certificate of insurance for:

Workman's Compensation and Employer's Liability Insurance for all employees.

General aggregate of $2,000,000.00 including products comprehensive/operating aggregate, Personal injury of $1,000,000.00 combined each occurrence, Fire damage of $50,000.00 and Medical expense of $5,000.00 Automobile liability of $1,000,000.00 combined single limit, including any auto, all owned autos, scheduled autos, hired autos, non-owned autos, and garage liability.

Excess umbrella liability coverage of $1,000,000.00 each occurrence.

All insurance policies must be maintained for the life of the contract, must provide ten (10) days notice before cancellation, must cover all operations of the Contractor, or anyone employed by any of them.

GENERAL CONSTRUCTION AND DESIGN

The design of the equipment shall be in accordance with the best engineering practices. The equipment design and accessory installation shall permit accessibility for use, maintenance and service. All components and assemblies shall be free of hazardous protrusions, sharp edges, cracks or other elements which might cause injury to personnel or equipment. All components shall be designed and protected so that heavy rains or other adverse weather conditions will not interfere with normal servicing or operation.

All oil, hydraulic and air tubing lines, and electrical wiring shall be located in protective positions properly attached to the frame or body structure and shall have protective loom or grommets at each point where they pass through structural members, except where a through frame connector is necessary.

The apparatus shall be designed and the equipment mounted with due consideration to distribution of load between the front and rear axles, so that all specified equipment including personnel will be carried without injury to the apparatus. All dimensions are approximate and subject to a plus or minus 1/4" tolerance.

The following specifications describe minimum requirements for a fire apparatus vehicle designed for severe Fire Department service.

The materials specified are considered absolute minimum. Exceptions will not be accepted or permitted since all raw materials of the specified type are available to all Manufacturers. Since all custom Manufacturers have the ability to shear, break, and weld as these specifications require, all basic design requirements shall be complied with.

Subletting any part of the fabrication, painting, or finishing of the apparatus will not be acceptable.

ACCESSIBILITY

Parts and components shall be located or positioned for rapid and simple inspection and recognition of excessive wear or potential failure. Whenever functional layout of operating components determines that physical or visual interference between items cannot be avoided, the item predicted to require the most maintenance shall be located for best accessibility.

Cover plates which must be removed for component adjustment or part removal should be equipped with quick disconnect fasteners or hinged panels.

Drains, filler plugs, grease fittings, hydraulic lines, bleeders, and check points for all components should be located so that they are readily accessible and do not require special tools for proper servicing. Design practices should minimize the number of tools required for maintenance.

NAMEPLATES AND INSTRUCTION PLATES

All nameplates and instruction plates shall be metal or plastic with the information engraved, stamped or etched thereon. If metal, they shall be made of non-corrosive material.

Nameplates shall show make, model, serial numbers and other such data necessary to positively identify the items. All plates shall be mounted in a conspicuous place with stainless steel screws and bolts.

MATERIALS

The materials specifications are considered absolute minimum. Exceptions will not be accepted or permitted since all raw materials of specified type are available to all manufacturers. Since all fire manufacturers have the ability to shear, break and weld as these specifications require, all basic design requirements shall be complied with.

Materials shall conform to the specifications listed herein. When not specifically listed, materials shall be of the best quality for purpose of commercial practice. Materials shall be free of all defects and imperfections that might affect the serviceability of finished product.

QUALITY AND WORKMANSHIP

The manufacturing process, including quality control, shall be consistent with present industry standards. All equipment, material, and articles required under these specifications are to be new or fabricated from new materials produced from recovered materials. The term "Recovered Materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this document. The term "Heavy Duty", as used to describe an item, shall mean in excess of the standard, quantity, quality, or capacity and represents the best, most durable, strongest, etc., part, component, system, etc., that is available. The purchaser or their designate shall be the sole judge of quality, construction and stability of the apparatus and equipment being offered.

Welding shall not be employed in the assembly of the apparatus in a manner that will prevent the ready removal of any component part for service or repair. All steel and stainless steel welding shall be done to American Welding Society D1.1-83 recommendations for structural steel welding. All aluminum welding shall be done to American Welding Society and ANSI D1.2-83 requirements for structural welding of aluminum.

Defective components shall not be furnished. Parts, equipment, and assemblies, which have been repaired or modified to overcome deficiencies, shall not be furnished without the approval of the purchaser. Welded, bolted, and riveted construction utilized shall be in accordance with the highest standards of the industry. Component parts and units shall be manufactured to definite standard dimensions with proper fits, clearances, and uniformity. General appearance of the vehicle shall not show any evidence of poor quality of work.

INTERNET IN-PROCESS SITE

The Bidder shall post and maintain a web site where the Purchaser will be able to view digital images of their truck as its being manufactured. The digital images shall be posted once a week starting when the body begins production or when the cab/chassis arrives and shall continue until the final completion of the unit.

MANUALS AND TECHNICAL SUPPORT DOCUMENTATION

Two (2) manuals shall provide to assist, guide, and direct Purchaser's personnel in their use of apparatus and equipment within its manufactured design criteria and limitations, as well as technical support regarding testing, maintenance, diagnosis and repair. These manuals shall be in three-ring notebook type binders, with reference tabs for each section of the vehicle. Within each section shall be:

1. Individual component manufacturer instruction and part manuals
2. Warranty forms for body
3. Warranty forms for all major components
4. Warranty instructions and format to be used in compliance with warranty obligations
5. Wiring diagrams
6. Blueprints of final body and compartment fabrication
7. Necessary normal routine service forms, publications, component of body portion of apparatus
8. Technical publications on training and instruction for major body components
9. Warning notices and safety related section for personnel protection
10. Two (2) chassis parts, service and maintenance manuals shall be provided.
11. The efficient maintenance and service of the vehicle is of prime importance to the purchaser. To properly maintain the vehicle electrical system, the apparatus must be constructed with the finest in electrical materials and components.

ELECTRICAL SCHEMATICS

The efficient maintenance and service of the vehicle is of prime importance to the Purchaser. To properly maintain the vehicle electrical system, the apparatus must be constructed with the finest in electrical materials and components.

To maintain the vehicle electrical systems, the Purchaser must be provided with the instructional manuals, complete electrical information and schematics on the vehicle. The electrical information shall be provided as follows:

12 AND 120/240 VOLT WIRING SYSTEMS

Individual 17" x 11" computer drawn schematics for each electrical circuit, noting the circuit number, wire size, switches, breakers and terminals for that particular circuit and appliance.

CONSTRUCTION PERIOD

The Bidder shall specify the number of days after award of the contract and after receipt of cab/chassis in which the apparatus will be completed. The maximum period for construction shall be one hundred eighty (180) days after receipt of Purchase Order.

Bidder shall not be held liable for delays of chassis delivery due to accidents, strikes, floods or other events not subject to their control. Bidder shall provide immediate written notice to Purchaser as to delays and to what extent these delays have in completing apparatus within the stated construction time period.

WARRANTY

The Bidder shall provide a full statement of the warranty provided for the vehicle(s) being bid. This warranty should clearly describe the terms under which the vehicle's Manufacturer accepts responsibility for the cost to repair defects caused by faulty design, quality of work or material, and for the applicable period of time after delivery.

Cost of repairs refers to all costs related thereto including, but not limited to, the cost of materials, the cost of labor.

The Manufacturer shall warrant all materials and accessories used in the vehicle(s), whether fabricated by the Manufacturer or purchased from an outside source and will deal directly with the Purchaser on all warranty work.

The warranty shall commence upon acceptance of the vehicle.

GENERAL WARRANTY - ONE (1) YEAR

The entire vehicle, apparatus and equipment shall be warranted, including parts and labor for a period of at least **one (1) year** commencing upon the placing of the unit in-service by the Purchaser (except that warranty on the tires and tubes, batteries, electrical lamps, and other devices subject to deterioration is limited to the warranty of the manufacturer thereof and adjustments for same are to be made directly with the manufacturer). Extended warranties on the engine, transmission, or other major components shall be detailed by Bidder in proposal.

This warranty shall not apply to those items which are usually considered normal maintenance and repair; including but not limited to normal lubrication or proper adjustment of main functional operating components. All manufacturers' warranties (apparatus & equipment) shall be furnished and indicated in the manufacturer's bid. Any standard warranties, including, but not limited to engine, transmission, tires and axles furnished by the original equipment manufacturer (OEM) or the prime contractor will be passed on to the Purchaser. Also include any available extended warranties that will start after the initial warranty period. Goods or property shall be as represented by these specifications as well as additional agreements as a result of discussions regarding these specifications and shall be as promised with implied liability on the manufacturer.

The Body Manufacturer must be the "single source" coordinator of all warranties on the vehicle.

STRUCTURAL WARRANTY - TEN (10) YEARS

The Manufacturer shall warrant that each new rescue body (exclusive of paint, finish, hardware, moldings, windows, and other appointments and accessories) is structurally sound and free of all structural defects of both material and workmanship and further warrants that it will maintain such structural integrity for a period of **ten (10) years** from the completion date listed on the Manufacturer's data plate attached to the vehicle inside the cab.

The Manufacturer further warrants that this structural integrity warranty may be transferred to a second Purchaser providing the vehicle is inspected by the Original Manufacturer or their authorized representative within thirty (30) days of ownership transfer. To maintain warranty coverage, the proper ownership transfer papers shall be kept on file at Manufacturer's facility.

In the event of a chassis remount, this structural warranty shall remain in effect providing that the re-chassis work is completed by the Manufacturer or a facility which obtains written authorization from the Manufacturer.

Should repairs become necessary under the terms of this warranty, the extent of the repair shall be determined solely by the Manufacturer and shall be repaired by the Manufacturer or an Authorized Service Center designated by the Manufacturer. The expense of any transportation to or from the ASC shall be the responsibility of the Purchaser and is not an item covered by this warranty.

There shall be a Warranty Certificate supplied with the completed apparatus to detail the warranty configuration.

TESTING

12 VOLT DC - NFPA TEST

The apparatus low voltage electrical system shall be tested and certified by the manufacturer per NFPA 1901. The test shall be performed with the air temperature between 0 degrees F and 110 degrees F.

TEST SEQUENCE

The following three (3) tests shall be performed in the order indicated below. Before each test, the batteries shall be fully charged. A full charge condition shall be when the charge voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for ten (10) minutes. Failure of any of these tests shall require a repeat of the sequence.

RESERVE CAPACITY TEST

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical loads shall be activated for ten (10) minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test failure.

ALTERNATOR PERFORMANCE TEST AT IDLE

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. 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 Engine 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. However, an alarm sounded by excessive battery discharge, as detected by the system required to notify apparatus personnel of electrical system failure, or a system voltage of less that 11.7 volts DC for a 12 volt nominal system for more that 120 seconds, shall be considered a test failure.

LOW VOLTAGE ALARM TEST

Following completion of the above tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates.

The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less that 11.7 volts DC for a 12 volt nominal system shall be considered a test failure.

The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered test failure.

DOCUMENTATION

Documentation of the electrical system performance test shall be provided with delivered apparatus. In addition a written load analysis, including the following;

- Nameplate rating of alternator.
- Alternator rating under the conditions specified in NFPA 1901, 13.3.2.
- Each component load specified in NFPA 1901, 13.3.3 comprising the minimum continuous load.
- Additional loads that when added to the minimum continuous load determines the total connected load.
- Each individual intermittent load.

120/240 VOLT AC NFPA TEST

The apparatus 120/240 volt electrical system shall be tested and certified by the manufacturer per NFPA 1901. Certification shall be provided with delivered apparatus.

The test shall be performed with the air temperature between 0 degrees and 110 degrees F.

TEST SEQUENCE

The following test shall be performed in the order indicated below.

The wiring and permanently connected devices (excluding utilization devices) are subjected to 900 VAC for one (1) minute. The test is conducted between live parts and the neutral conductor, as well as between the live parts and the vehicle frame with any switches in the circuit closed. The test is accomplished with a Biddle HiPot tester model 230315.

The generator output is tested at 100% of its nameplate rating for a minimum of two (2) hours, into a resistive load. The following information is recorded of the generator and its power supply at thirty (30) minute intervals during the test: voltage, amperage and frequency output of the generator, as well as the oil pressure, water temperature, transmission temperature, hydraulic temperature, and the battery charge rate, as applicable.

APPARATUS DELIVERY

The Fire Department shall pick up finished apparatus at Manufacturer's facility. The Manufacturer shall be responsible for notifying the Fire Department a minimum of two (2) weeks prior to the completion of apparatus, so that Fire Department has sufficient time to schedule pickup.

CAB CHASSIS SPECIFICATIONS

MANUFACTURER: Ford

Model: 2004 F550 Super Duty, 2-Door Super Cab, 4 x 4 (Ambulance Prep Package)

G.V.W.R.: 17,500 lbs.

Wheelbase: 162" Cab to axle: 60"

FRONT AXLE:

Rating: 6,000 lbs.

Type: Dana mono beam drive axle, or equal

Shocks: Heavy duty

Front Springs: Single stage, Constant rate, 6,000 lb. capacity

Steering: Power

REAR AXLE:

Rating: 13,500 lbs.

Type: Dana or equal full floating with 4.88 ratio, Limited-slip, and Stabilizer bar

Rear Springs: Two-stage, 13,500 lb. capacity

Shocks: Heavy duty

BRAKES:

Type: Four-wheel power disc brakes with ABS system

Parking Brake: Cable actuation, foot operated, hand release

TIRES AND WHEELS:

Front Tires: (2) LT225/70R 19.5, Max Traction tread

Rear Tires: (4) LT225/70R 19.5, Max Traction tread

Wheels: 19.5", 8-hole steel disc

Spare: (1) LT225/70R 19.5, Max Traction tread, (1) steel disc wheel

CHASSIS SPECIFICATIONS

FRAME:

Type: Single channel

Rating: 36,000 PSI steel, 10.1 section modulus

ENGINE:

Manufacturer: Navistar

Model: 6.0 L Power Stroke Turbo Diesel

Rating: 325 GHP @ 3,300 RPM, 560 GT @ 2,000 RPM

Engine Equipment: Heavy duty dry type air cleaner, fuel filter, horizontal muffler and exhaust, block heater.

TRANSMISSION:

Manufacturer: Ford

Type: Automatic

Speeds: 5-speed forward with overdrive
1-speed reverse

Transfer Case: New Venture or equal, Hi/Lo, manual hubs, with fuel tank skid plate

ELECTRICAL:

Alternator: Dual 130 amp (Alternators to be replaced by Body Builder for AuraGen under hood generator installation.)

Battery: Dual maintenance free 78 amp/hr, 750 CCA each

FUEL TANK:

Size: 40 total gallons

Location: Mid ship mounted aft of rear axle

CAB SPECIFICATIONS

Cab Type: Super Cab with Ambulance Prep Package, XL trim interior

Cab Equipment: Heater and defroster, air conditioning, dome light, sun visor, electric horn, all clearance lights and identification lights required by State and Federal Department of Transportation and all standard equipment, Speed control, Tilt steering wheel, Power door locks, Power windows, AM/FM stereo/clock, Driver/passenger air bag SRS system.

Cab Instruments and Gauge: Fuel, Odometer, Tachometer, Engine oil pressure, Engine water temperature, Volt meter, Auxiliary idle control.

Seats: Front high back cloth bucket seats with 3-point seat belts, Rear cloth bench seat with center 2-point and outer 3-point seat belts

Cab Mirrors: Door mounted manual adjustable black plastic camper tow mirrors

Cab Glass: Tinted solar glass

Bumper: Chrome plated

Windshield Wipers: 2-speed electric with washers

Cab Color: Ford Red

Cab Interior Color: Medium Flint

Floor Mats: Rubber floor mats in lieu of carpet

CHASSIS MODIFICATIONS

LUBRICATION PLATE

A permanent plate shall be installed in the Driver's compartment, which indicates the type and quantity of the following fluids in the vehicle:

- Engine Oil
- Engine Coolant
- Transmission Fluid
- Drive Axle Fluid
- Air Conditioning Refrigerant, Air Conditioner Oil (if applicable)
- Power Steering Fluid
- Cab Tilt Fluid (if applicable)
- Transfer Case Fluid (if applicable)
- Pump Transmission Fluid (if applicable)
- Pump Primer Fluid (if applicable)
- Equipment Rack, Air Compressor, Generator, etc. . . . (If applicable)

VEHICLE DATA PLATE

A permanent plate shall be installed in the Driver's compartment, which indicates the following:

- Filter Part Numbers for the Engine, Transmission, air and fuel systems
- Serial Number for the Engine and Transmission
- Delivered Weights of the Front and Rear Axles
- Paint Code Brand and Code(s)
- Body Builder Project Number

OVERALL HEIGHT PLATE

There shall be a placard located in direct view of the Driver, which shall indicate the overall height of the vehicle.

ACCIDENT PREVENTION

There shall be a placard in the cab seating area which reads, "ALL OCCUPANTS MUST BE SEATED AND BELTED WHEN THE APPARATUS IS IN MOTION".

PERSONNEL CAPACITY

There shall be a placard mounted in the Driver's compartment, which specifies the maximum number of personnel the vehicle is design to carry per NFPA standards. The placard shall be located in clear view of the Driver.

ACCIDENT PREVENTION

If there is a rear bumper extension of 8" or more, there shall be a placard on the rear face of the body, in clear sight from the ground, which reads, "WARNING - DO NOT RIDE ON STEPS OR DECK AREAS WHILE THE APPARATUS IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT".

FRONT BUMPER

The front bumper shall be as provided by cab/chassis manufacturer. No other alternation or modifications are required.

RAMSEY WRAP AROUND GRILLE GUARD

There shall be a Ramsey "Wrap Around" grille guard assembly provided and installed on the front of the chassis cab grille area. The "Grille Guard" shall be black in color and shall have mounting provisions for a Ramsey winch.

FRONT MOUNTED WINCH

The front bumper extension shall be provided with a heavy duty winch installation. The winch shall be a Ramsey RE-12000, 12 volt electric, 12,000 lb. capacity winch.

The winch shall be equipped with 100' of 3/8" galvanized cable.

The control of the winch shall be with a plug-in remote control unit. The unit shall have 25' of control cable, with forward, neutral, and reverse dead man type hand control.

The cable shall end with a clamp type loop, with a drop forged heavy duty hook. Cable shall feed through a full captive type 4-way roller and guide assembly.

EXHAUST

The exhaust system shall be as provided by cab/chassis manufacturer. No other alternation or modifications are required.

ALTERNATOR

There shall be a 210 amp Lestek Brute alternator installed on the chassis.

RE-PAINT CAB - ONE COLOR

The cab shall be re-painted with Akzo Nobel Inc. - Sikkens "Autocryl" acrylic urethane finish paint for a high gloss, hard finish.

Exterior Color: Red

Exterior Paint Number: FLNA3626

The portion of the cab/chassis painted by the Body Builder shall be finished with a clear coat of acrylic urethane for paint protection and maximum quality finish.

CHASSIS PAINT WARRANTY

The portion of the chassis painted by the Body Manufacturer shall be provided with a seven (7) year paint warranty to the original Owner. Warranty shall be provided by Akzo Nobel Inc. A "Sikkens Warranty" sheet with all conditions and maintenance procedures shall be provided with delivered apparatus.

CAB RUNNING BOARDS

The chassis shall be provided with aluminum tread plate running boards the full length of the cab, below cab doors.

MUDFLAPS

There shall be rubber mud flaps furnished and installed behind each set of tires.

WHEEL COVERS

Chassis shall be provided with "Real Wheels" chrome plated full wheel covers on front and rear axles.

ROAD EMERGENCY SAFETY KIT

One (1) set of three dual faced triangular warning flares with fold away base complete with storage case per DOT requirements shall be provided with completed unit.

One (1) 2.5 lb. ABC type vehicle fire extinguisher with bracket shall be provided and mounted in cab or front streetside compartment.

FUEL FILL

There shall be a Cast Products aluminum fuel fill with hinged door located on the rear panel of the body, on the streetside. The fuel fill casting shall be connected to the chassis fuel tank.

BODY DESIGN

The importance of public safety associated with all fire fighting vehicles require that the construction of this vehicle meet the following specifications. These specifications are written to establish the minimum level of quality and design. All Bidders shall be required to meet these minimum requirements.

It is the intent of these specifications to fully describe requirements for a custom built emergency type vehicle. To extend the expected service life of the vehicle, the body module shall be removable from the chassis frame, and be able to be installed on a new chassis.

The sheet metal materials and gauge through the specifications are considered as minimum. Since such materials are available to all Manufacturers, the material specifications shall be strictly adhered to.

The fabrication of the body shall be formed sheet metal. Formed components shall allow the Fire Department to have the body repaired locally in the case where any object has struck the body and caused damage. The use of proprietary extrusions will prevent the Fire Department from such repair and shall NOT be used.

Following construction of the sub frame that will support the apparatus body, the sheet metal portion of the body shall be built directly on the sub frame. The joining of the sub frame and body shall be of a welded integral construction.

The sheet metal fabrication of the body shall be inert gas continuous feed welders only. The entire body shall be welded construction. The use of pop rivets in any portion of construction may allow premature failure of the body structure and shall NOT be used in construction of the body. This includes side body sheets, inner panels of compartment doors, and any other structural portions of the body.

EXTERIOR ALUMINUM BODY

The fabrication of the rescue body shall be constructed from aluminum 3003H-14 alloy smooth plate. This shall include compartment front panel, vertical side sheets, side upper rollover panels, rear panels and compartment door frames.

The body compartment floors and exterior panels shall be constructed with not less than 1/8" (.125) aluminum 3003H-14 smooth plate. Interior compartment dividing walls shall be constructed with not less than 1/8" (.125) aluminum 3003H-14 smooth plate. Lighter gauge sheet metal will not be acceptable in these areas.

The door side frame openings shall be formed "C" channel design. An electrical wiring conduit raceway running the full length of exterior compartments shall be provided. This raceway shall contain all 12 volt wiring running to the rear of the apparatus, permitting easy accessibility to wiring.

Individual compartment modules, with dead air space voids between compartments, will not be an acceptable method of compartment construction.

The compartments shall be an integral part of the body construction. Compartment floors from front of body to ahead of rear axle, also from rear axle to rear of body shall be single one-piece sections. Compartment floors shall be preformed, then positioned in body and welded into final position.

Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments. Angles, lips, or door moldings are not acceptable in the base of compartment door opening. One-way rubber drain valves shall be provided in compartment floors so that a water hose may be used to flush-out compartment area.

All seams in sheet metal below frame, and around the rear wheel well area shall be welded continuous to prevent moisture from entering compartments. All other interior seams and corners shall be sealed with silicone based caulk prior to painting.

Only stainless steel bolts, nuts, and sheet metal screws shall be used in mounting exterior trim, hardware and equipment.

Exterior compartments shall be machine louvered in lower back wall of compartment for ventilation.

ROOF CONSTRUCTION

The roof shall be integral with the body and shall be all welded construction. The roof of the body shall not be less than 3/16" aluminum 3003H-14 alloy tread plate, fully and continuously welded. The roof shall be reinforced with 2" x 2" x 1/4" aluminum tubing running the full width of the body. A 2" rounded radius shall be provided along the body sides.

BODY SUBFRAME

To assure proper body alignment and clearance, the body sub frame shall be constructed directly on the chassis.

The chassis frame rails shall be fitted with 5/16" x 2" fiber reinforced rubber to isolate the body frame members from direct contact with chassis frame rails.

The body sub frame shall be constructed from 6061T6 aluminum alloy tubing. Sub frame shall consist of two (2) 2" x 4" x 1/4" aluminum tubes minimum, the same width as the chassis frame rails. Welded to this tubing shall be cross members of 2" x 4" x 1/4" aluminum. Smaller dimension, lighter gauge tubing or angle material sub frame shall not be accepted.

These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of the body, below compartment divider walls, and in front and rear of wheel well opening. Additional aluminum cross members shall be located as necessary to support walkways or heavy equipment.

To form the frame, the tubing shall be beveled and welded at each joint using 5356 aluminum alloy welding wire.

BODY MOUNTING

For optimum chassis frame and body life, the body sub frame shall be fastened to the chassis frame with a minimum of six (6) 1/2" x 2-1/2" strap mounts, welded to the body sub frame. The straps shall be bolted to the chassis frame work utilizing 1/2" Grade L9 bolts.

3" REAR BUMPER

The full width rear bumper shall be constructed from minimum 2" x 4" x 1/4" aluminum tubing and covered with 3/16" aluminum tread plate. The bumper shall extend from the rear vertical body panel 3" with a 1" space between the body and bumper for water drainage. Bumper shall be an extension of the body sub frame for strength and not a bolted on assembly.

REAR TOW LOOPS

There shall be two (2) heavy duty tow loops securely attached to the body frame below body. Rear tow loops shall be fabricated of 1/2" diameter rod and be painted black.

WHEEL WELL EXTERIOR PANEL

The exterior panel of the body wheel well enclosure shall be constructed from 1/8" aluminum smooth plate.

A die formed beaded edge shall be provided along radius of the wheel well opening for a finished appearance.

WHEEL WELL LINERS

The wheel wells shall be constructed by the compartment walls that surround the wheel well area. The interior wheel well area shall be designed so that it does not accumulate dirt or water.

ALUMINUM BODY PAINT SPECIFICATIONS

The final finishing of this apparatus shall be to fire apparatus standards exhibiting excellent gloss, durability, and color retention properties. Commercial type paint finish shall not be acceptable. A warranty sheet with all conditions shall be provided with completed apparatus.

All flush mounted lights; drip moldings, windows, and other equipment shall be fitted to the apparatus prior to paint finishing, then removed to assure full paint coverage under all equipment.

The apparatus body shall be sanded smooth on all exterior surfaces to assure removal of all imperfections in metal surface and to assure good adhesion of paint to body. All metal surfaces shall be chemically cleaned and metal etched with acid cleaner prior to paint.

The body shall receive a corrosion resistant epoxy primer coat. The primer coat shall be lightly sanded to assure a smooth surface for a final coat. All seams and corners in sheet metal on interior and exterior shall be sealed with automotive type caulk prior to painting finish coat.

Prior to the assembly and reinstallation of lights, handrails, door hardware, and any miscellaneous items, an isolation tape, or gasket material must be used to prevent damage to the finish painted surfaces.

Touch-up paint shall be provided with completed apparatus.

PAINT FINISH

The apparatus body shall be painted single color with Akzo Nobel Inc. - Sikkens "Autocryl" Acrylic Urethane Finish paint for a high gloss, hard finish.

Exterior Color: Red

Exterior Paint Number: FLNA3626

The painted body shall be finished with a clear coat of acrylic urethane for paint protection and maximum quality finish.

PAINT WARRANTY

The apparatus shall be provided with a seven (7) year warranty to the original Owner. Warranty is provided by "Sikkens" sponsored by AKZO Nobel. A "Sikkens Warranty" sheet with all conditions shall be provided with delivered apparatus.

BODY UNDERCOATING

The entire underside of apparatus body shall be sprayed with black automotive undercoating. Undercoating shall cover all areas to retard corrosion under apparatus.

UNDERCOAT WARRANTY

The undercoating shall be provided with a warranty by its manufacturer for the lifetime of the vehicle. The re-spray warranty shall be transferable between vehicle owners. Should the coating applied to the underside of the body and wheel wells of the vehicle ever flake off, peel, chip or crack due to drying out, the damaged area shall be re-sprayed without charge to the vehicle owner.

REFLECTIVE STRIPE - BODY

A 4" minimum reflective stripe shall be affixed to the perimeter of the vehicle per NFPA 1901 Standards. The stripe shall conform to ASTM 4965, *Standard Specifications for Retroreflective Sheeting for Traffic Control,* Type III, Class 1 or Class 3. The length of stripe shall be 50% of the cab and body length of each side, 50% of the rear of the body, and 25% of the front width of apparatus.

The stripe color shall be White.

The stripe shall remain in a straight line from the front of the vehicle to the rear.

REFLECTIVE STRIPE - CAB

A 4" minimum reflective stripe shall be provided on specified cab in compliance with NFPA 1901 standards.

The stripe color shall be white.

LETTERING

The following lettering shall be furnished and installed on the completed unit:

SIDE CAB DOOR LETTERING

There shall be fifty (50) 3" high reflective letters furnished and installed on the vehicle. The reflective color shall be White.

Final design and layout shall be determined prior to construction.

UPPER BODY SIDE LETTERING

There shall be twenty (20) 6" high reflective letters furnished and installed on the vehicle. The reflective color shall be White.

Final design and layout shall be determined prior to construction.

COMPARTMENT INTERIOR FINISH

The interior of all exterior body compartments shall be a "Maintenance Free" smooth unpainted finish. All body seams shall be finished with a caulk sealant for both appearance and moisture protection.

EXTERIOR COMPARTMENT DOORS

ROLL-UP DOOR CONSTRUCTION

The apparatus shall be equipped with Robinson Series III shutter exterior compartment doors. The doors shall be constructed of satin finished anodized aluminum slats. The slats exterior surface is flat, while the rear surface is concave to prevent loose equipment from interfering with door operation.

The aluminum extrusions shall be equipped with nylon end shoes that slide in extruded aluminum tracks for easy operation.

The shutter door shall have a pretension operator in a sealed alloy drum and positioned at the upper front portion of compartment to afford maximum clearances and head room for mounting equipment to ceiling of compartment.

Each shutter door shall be completely weather resistant assembly. Neoprene seals shall be provided on sides, bottom upper portion of the door and in between each slat.

Latching of the exterior compartment shutter door shall be with an aluminum, spring loaded full width lift bar. The lift bar shall latch itself under two (2) cam shaped strike blocks mounted on the outer door frame of the compartment. A magnetic door ajar switch system shall be provided and built into the striker blocks and the end caps of the lift bars. An extra wide finger pull shall be provided above each lift handle to assist in closing compartment doors.

Each shutter door shall decrease the compartment door frame opening approximately 2" in width and approximately 4-1/2" in height for the bottom section of door assembly.

EXTERIOR ROLL-UP DOOR FINISH

The roll-up doors shall have a satin aluminum finish on the door slats and the door trim components.

The reflective stripe shall be applied over the roll-up doors. The stripe shall be precision cut at each seam of the roll-up doors.

COMPARTMENT OPTION DESCRIPTIONS

All interior compartment options shall be fabricated as follows:

ADJUSTABLE SHELVING HARDWARE

Adjustable shelving hardware shall be provided indicated in the numbered compartment list.

The shelving hardware shall include a minimum of four (4) aluminum "Uni-Strut" C-channel supports mounted vertically on compartment side walls or vertical partitions. There shall be one (1) cast aluminum shelf bracket per vertical "Uni-Strut" to mount each shelf, tray, or adjustable storage module. Shelving hardware shall be of heavy duty quality with unlimited vertical adjustment settings.

ADJUSTABLE SHELF/SHELVES

Adjustable shelf/shelves shall be provided in exterior compartment as indicated in the numbered compartment list.
Shelves shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate with a 2" vertical flange along the front and rear edges. Shelves shall be designed to be used with flanges either in the upward position to hold various equipment on shelf, or in the downward position for sweep-out shelf surface.

All shelves shall be fully adjustable, from top to bottom of the compartment. There shall be at least four (4) vertical mounting channels and shelving hardware, two (2) each side of compartment. Shelving hardware shall be of heavy duty quality with unlimited vertical adjustment settings.

SLIDE-OUT EQUIPMENT TRAY - (400 # CAPACITY)

Slide-out equipment tray(s) shall be provided in exterior compartment, as indicated in the numbered compartment list.

Trays shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate. Trays shall be built with a 3" vertical lip, with welded corners, to form a box type tray surface. Sliding tracks shall be Accuride 502 series. The length shall be per numbered compartment list and the extension shall be 100% of the slide length. Slides shall be constructed of formed steel with ball bearings mounted in triple track rails.

Tray(s) shall utilize a pneumatic cylinder mounted on underside to hold the tray in both the extended and closed positions.

HEAVY DUTY SLIDE-OUT EQUIPMENT TRAYS - (1,000# CAPACITY)

Heavy duty slide-out equipment tray(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

Trays shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate. Trays shall be built with a 4" high vertical lip with welded corners to form a box type tray surface. Tray shall be mounted on a 3-rail heavy duty structural steel frame with twelve (12) sealed 1,000 lbs. static load ball bearings. The slide-out tray shall be rated for a maximum 1,000 lbs. distributed load, and a 500 lbs. concentrated end load.

The tray shall be locked in its stored position as well as at 50%, and 100% of extension for loading or as a stationary work surface.

SLIDE-OUT TOOL BOARD (SMOOTH ALUMINUM)

Slide-out tool board(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

Tool boards shall be fabricated of 3/16" (.188) aluminum 3003H-14 alloy smooth plate with double flange at outer edge to provide an easy grip handle. The top and bottom of tool board shall be provided with Accuride 502 series slide tracks. The length shall be per numbered compartment list and the extension shall be 100% of the slide length. Slide tracks shall be constructed from formed steel with ball bearings in triple track rails.

Tool board(s) shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions. Both the upper and lower roller slide shall be mounted to "Uni-Strut" C-channel to allow the tool board to be adjusted horizontally for best fit in the compartment.

COMPARTMENT LIGHTS

The compartment lights shall be automatically activated when the compartment door is opened. If the compartment is transverse, all lights in the transverse area shall be activated when either of the two (2) transverse area compartment doors are opened.

BODY HEIGHT MEASUREMENTS

The top of the body shall be approximately 10" above the roof of the cab chassis.

Vertical body dimensions shall be as follows:

AHEAD OF REAR AXLE

	Description	Dimension
A	Bottom of Sub frame to Top of Body	58.5"
B	Bottom of Sub frame to Bottom of Body	15.5"
C	Vertical Door Opening	
	-with roll-up door	51.5"
	-with hinged door	54.5"

ABOVE REAR AXLE

	Description	Dimension
D	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	30.5"
	-with hinged door	33.5"

BEHIND REAR AXLE

	Description	Dimension
E	Bottom of Sub frame to Bottom of Body	15.5"
F	Vertical Door Opening	
	-with roll-up door	51.5"
	-with hinged door	54.5"

GENERAL

	Description	Dimension
G	Bottom or Drip Rail to Top of Body	13.5"

BODY WIDTH DIMENSIONS

The body shall be 96.0" wide, not including drip rail or non-permanent fixtures. Interior compartment depth dimensions shall be:

Area Description	Dimension
Transverse Area:	91.5"
- Above Top of Sub frame	
Compartment Depth:	21.5"
- Below Top of Sub frame	
- Ahead of Rear Axle	
Compartment Depth:	21.5"
- Below Top of Sub frame	
- Behind the Rear Axle	

EXTERIOR COMPARTMENT DIMENSIONS

No. 1 Streetside front compartment with the approximate interior useable compartment space of 32.0" wide.

The approximate compartment door opening shall be 26.5" wide.

This compartment shall have a Robinson Roll-up door with an exterior satin aluminum finish.

There shall be NO keyed locks on the roll-up compartment doors.

This compartment shall have the following items:

- The 120/240 volt electrical load center
- The controls for the specified light tower
- The Electronic Control Unit for the Aura Gen generator
- One (1) pump panel
- One (1) cross lay / speed lay
- There shall be one (1) Robinson ACL (Adjustable Compartment Light) light installed in this compartment. Each light shall be mounted vertically, inside the compartment door.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength

EXTERIOR COMPARTMENT DIMENSIONS

No. 2 Streetside compartment over the rear wheel well with the approximate interior useable compartment space of 49.0" wide.

The approximate compartment door opening shall be 38.0" wide.

This compartment shall have a Robinson Roll-up door with an exterior satin aluminum finish.

There shall be NO keyed locks on the roll-up compartment doors.

This compartment shall have the following items:

- There shall be vertically mounted Uni-Strut for shelving installation
- One (1) water tank
- There shall be one (1) Robinson ACL (Adjustable Compartment Light) light installed in this compartment. Each light shall be mounted vertically, inside the compartment door.

EXTERIOR COMPARTMENT DIMENSIONS

No. 3 Streetside compartment behind the rear wheel well with the approximate interior useable compartment space of 34.0" wide.

The approximate compartment door opening shall be 28.5" wide.

This compartment shall have a Robinson Roll-up door with an exterior satin aluminum finish.

There shall be NO keyed locks on the roll-up compartment doors.

This compartment shall have the following items:

- There shall be vertically mounted Uni-Strut for shelving installation
- There shall be two (2) adjustable shelf/shelves approximately 22" deep
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 28" deep and as wide as the compartment door opening permits
- There shall be one (1) Robinson ACL (Adjustable Compartment Light) light installed in this compartment. Each light shall be mounted vertically, inside the compartment door.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY

EXTERIOR COMPARTMENT DIMENSIONS

No. 4 Curbside front compartment with the approximate interior useable compartment space of 32.0" wide.

The approximate compartment door opening shall be 26.5" wide.

This compartment shall have a Robinson Roll-up door with an exterior satin aluminum finish.

There shall be NO keyed locks on the roll-up compartment doors.

This compartment shall have the following items:

- There shall be vertically mounted Uni-Strut for shelving installation
- The 12 volt electrical distribution panel
- One (1) cross lay / speed lay
- There shall be one (1) Robinson ACL (Adjustable Compartment Light) light installed in this compartment. Each light shall be mounted vertically, inside the compartment door.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength

EXTERIOR COMPARTMENT DIMENSIONS

No. 5 Curbside compartment over the rear wheel well with the approximate interior useable compartment space of 49.0" wide.

The approximate compartment door opening shall be 38.0" wide.

This compartment shall have a Robinson Roll-up door with an exterior satin aluminum finish.

There shall be NO keyed locks on the roll-up compartment doors.

This compartment shall have the following items:

- There shall be vertically mounted Uni-Strut for shelving installation
- One (1) water tank
- There shall be one (1) Robinson ACL (Adjustable Compartment Light) light installed in this compartment. Each light shall be mounted vertically, inside the compartment door.

EXTERIOR COMPARTMENT DIMENSIONS

No. 6 Curbside compartment behind the rear wheel well with the approximate interior useable compartment space of 34.0" wide.

The approximate compartment door opening shall be 28.5" wide.

This compartment shall have a Robinson Roll-up door with an exterior satin aluminum finish.

There shall be NO keyed locks on the roll-up compartment doors.

This compartment shall have the following items:

- There shall be vertically mounted Uni-Strut for shelving installation
- There shall be two (2) adjustable shelf/shelves approximately 22" deep
- There shall be one (1) 400 lbs. slide-out tray(s) approximately 28" deep and as wide as the compartment door opening permits
- One (1) 120 volt electrical cable reel(s)
- There shall be one (1) Robinson ACL (Adjustable Compartment Light) light installed in this compartment. Each light shall be mounted vertically, inside the compartment door.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY

EXTERIOR COMPARTMENT DIMENSIONS

No. 7 Rear center compartment approximately 34.0" deep.

This compartment shall have the following items:

- There shall be one (1) 1,000 lbs. slide-out tray with a SlideMaster base approximately 34" deep and as fit between specified tool boards located above the chassis frame rails
- There shall be two (2) slide-out smooth aluminum vertical tool board(s)
- One (1) 240 volt electrical outlet(s)
- One (1) hydraulic power unit(s)
- Two (2) hydraulic hose reel(s)
- Mounting provisions for three (3) hydraulic ram(s)
- Mounting provisions for one (1) hydraulic cutter(s)
- Mounting provisions for one (1) hydraulic spreader(s)
- There shall be one (1) Robinson ACL (Adjustable Compartment Light) light installed in this compartment. Each light shall be mounted vertically, inside the compartment door.

The rear center compartment shall be closed to both side rear compartments.

The rear center compartment shall start at the top of the frame and be as high as the body permits.

The approximate door opening shall be 42" wide x 38" high.

This compartment shall have a Robinson Roll-up door with an exterior satin aluminum finish.

There shall be NO keyed locks on the roll-up compartment doors.

PLASTIC FLOOR AND SHELF TILE

All compartment floors, shelves, and trays shall be covered with Dri-Deck plastic interlocking grating.

The plastic floor tile shall be red in color.

FRONT GRAVEL GAURDS

Gravel guards shall be fabricated of brushed stainless steel. Gravel guards shall be installed on the front lower body corners and shall wrap around the corners to the front compartment door hinge on each side.

COMPARTMENT THRESHOLD PROTECTION

Compartment threshold protection plates shall be fabricated from brushed stainless steel. The protection plates shall be installed on the lower door opening sills of each exterior compartment.

FOLDING STEP(S)

There shall be five (5) NFPA approved folding step(s) furnished and installed. Each step shall be cast aluminum with heavy duty stainless steel spring and textured step surface.

12 VOLT ELECTRICAL INSTALLATION

The apparatus shall be equipped with a heavy duty 12 volt wiring system installed with proper devices for the fire service. The system shall include all components necessary for complete operation. The low voltage electrical system shall meet or exceed current NFPA 1901 Standards and SAE J1292 requirements.

System wiring shall be stranded copper conductors of a gauge rated to carry 125% of the maximum current for which the circuit is protected. All wiring shall be XLPE cross linked type conductors with function identification at least every 3" by color coding and permanent marking with circuit identification. Identification shall correspond with schematics provided with the vehicle. Wiring shall be mounted in high temperature protective loom secured to body with bolted on clips with nylon wire ties. The XLPE wiring shall have an operating temperature range of minus 84 degrees Fahrenheit to plus 302 degrees Fahrenheit. Cross-linking changes thermoplastic polyethylene to a thermosetting material, which has greater resistance to environmental stress cracking, cut-through, ozone, solvents and soldering than either low or high density polyethylene.

Where wire passes through sheet metal, grommets shall be used to protect wire and wire looms. Wiring shall be protected against heat, liquid contamination and damage. Electrical connections shall be with double crimp water-tight heat shrink connectors. Wire nut, insulation displacement, or insulation piercing connections shall NOT BE ACCEPTABLE.

All 12 volt wiring running from front to back of apparatus body shall be run in full length electrical wiring raceway down each side of body.

All 12 volt circuits shall be protected with properly rated low voltage over current devices. Such devices shall be readily accessible and protected against overheating, mechanical damage, and water spray. All switches, relays, terminals and connectors shall have a rating of 125% of maximum current for which the circuit is protected.

A complete electrical wiring schematic of actual system shall be provided with finished apparatus. Similar or generic type electrical schematics shall NOT BE ACCEPTABLE.

A low voltage final test certification shall be provided with delivered apparatus.

ROCKER SWITCH PANEL

The control of the 12 volt equipment installed on chassis and body shall be centrally located in the cab. The individual rocker style switches shall be located on a separate electrical panel, complete with backlit name tags describing function of each individual switch. The back lighting shall have two (2) levels of intensity, low level lights activated when the vehicle lights or ignition switch is turned "On", and high level lights activated when individual switch is turned "On". An internally lighted rocker switch shall be furnished to the left of specified emergency lighting switches, and identified as "MASTER EMERGENCY SWITCH".

Switch circuitry shall be on a printed circuit board with solid state type lighting with a 100,000 hour lifespan.

The rocker switch panel shall be located in the cab center console for all master switches and emergency light switches.

CAB CONSOLE

A center cab console shall be provided between the Driver and Officer's seats. Console shall be as large as possible and fabricated of 1/8" smooth aluminum. A textured powder coat paint finish shall be provided for durability and finished appearance.

The rear portion of the console shall be provided with open top storage approximately 5" wide x 18" long x 13" deep. Forward of open storage area shall be a enclosed storage area with a lift-up hinged cover approximately 11" wide x 18" long x 13" deep for Fire Department notebooks or maps. Three (3) adjustable dividers shall be provided in enclosed storage area. The forward portion of console shall be slanted for mounting of siren head, radio or 12 volt control panel, and etc, with easy access to both Driver and Officer.

The final design of console shall be determined by Fire Department prior to construction.

12 VOLT DISTRIBUTION PANEL

The 12 volt power distribution shall be conveniently located with easy access for service. All relays and circuit breakers shall be plug-in type allowing for removal for repairs without necessitating soldering or tools. The sockets mounts for both the relays and circuit breakers shall be of a design that permits the use of standard automotive type components. All circuit breakers shall be reset type.

The 12 volt distribution panel shall utilize printed circuit boards mounted in high strength enclosure. Each printed circuit board shall be provided with twelve (12) heavy duty independent switching relays. Each relay shall have the ability to be configured either normally open or normally closed and be protected by a 20 amp automatic reset breaker. Each circuit will be provided with a LED for visual diagnostic.

Power distribution panel shall be located in apparatus body within a protected enclosure with removable or hinged cover.

ELECTRICAL SYSTEM MANAGER

The apparatus 12 volt electrical system shall be provided with a system manager for:

- Monitoring chassis battery voltage
- Shedding pre-determined electrical circuits
- Sequencing pre-determined electrical circuits
- Automatically controlling chassis engine fast-idle
- Monitor master switch and parking brake applications
- Automatically control warning light modes ("Calling-For" and "Blocking Right of Way")
- Provide low voltage alarm
- Programmable control circuits
- Remote system status indicator panel

System manager shall perform all electrical functions required by current NFPA 1901 Standards.

BATTERY MONITORING

The system manager shall monitor the vehicle battery voltage. When electrical loads exceed the alternator output and the voltage drops, the load manager shall start shutting down electrical outputs. The system shall shut down only as many outputs required to maintain the system voltage. A special indicator to show different states of the electrical system by flashing at rate proportional to the battery discharge.

LOAD SEQUENCING AND SHEDDING

The system shall be capable of sequentially switching and shedding 12 volt loads. The Master light switch starts the sequential switch when it is turned "On". Likewise turning the Master Switch "Off" will sequentially de-energize the loads.

BATTERY SYSTEM

The battery connectors shall be heavy duty type with cables terminating in heat shrink loom. Heavy duty battery cables shall provide maximum power to the electrical system. The cables shall be shielded from exhaust tubing and the muffler. Large rubber grommets shall be provided where cables enter the battery compartment.

BATTERY SWITCH

One (1) battery "On/Off" switch with green "BATTERY ON" indicator shall be installed in cab within easy reach of Driver to activate the battery system.

BATTERY SOLENOID

Battery switch shall consist of a minimum 200 ampere, constant duty solenoid to feed from positive side of battery.

ENGINE COMPARTMENT LIGHT

There shall be one (1) light(s) mounted in the engine compartment with a switch mounted on each light. The engine compartment light(s) shall only operate when the master battery switch is turned "On".

CAB HAZARD WARNING LIGHT

A red "HAZARD" warning light shall be provided in chassis cab. Light shall illuminate automatically to warn the Driver of the following when the apparatus parking brake is not fully engaged:

- Any passenger or compartment door is open
- Equipment rack is not in stowed position
- Light tower is extended

The light shall be labeled "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

An audible alarm shall be provided for the door ajar light.

BACK-UP ALARM

Furnish and install electronic backup alarm (Tone-Master 102 db). Backup alarm to actuate automatically when transmission gear selector is placed in reverse.

TAIL LIGHTS

Rear body tail lights shall be vertically mounted per Federal Motor Vehicle Safety Standards. The following lights shall be furnished:

- Two (2) Whelen amber LED 600 Series 60A00TAR turn signal lights
- Two (2) Whelen red LED 600 Series 60R00BRR stop/tail lights
- Two (2) Whelen halogen 600 Series 60J000CR back-up lights with clear lens
- Two (2) Whelen warning lights as detailed in the warning light section

Two (2) Whelen CAST-4V, 4-light polished aluminum bezels shall be provided, one (1) each side vertically mounted on rear of apparatus body for above tail lights.

MIDSHIP MARKER/TURN SIGNAL

Two (2) LED midship body turn signal lights shall be installed. There shall be one (1) light on each side of the body, in the wheel well, ahead of the rear axle. Both lights shall have an amber lens and operate with chassis turn signals.

MARKER LIGHTS

The apparatus body shall be equipped with all necessary clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) regulations. All body clearance lights shall be LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of chassis.

STEP LIGHTS / GROUND LIGHTS

There shall be seven (7) clear lens door/step area scene light(s) provided on the apparatus. Lights shall be placed at each apparatus entry door and step where personnel climb on or descend from apparatus to ground level. All of the ground lights shall be activated when the parking brake is set.

LICENSE PLATE LIGHT

One (1) Arrow #437 chrome plated license plate light shall be installed on the lower left rear corner of apparatus body. License plate light shall be wired to the headlight circuit of chassis. Nutsert inserts shall be provided for license plate installation.

ELECTRONIC SIREN

One (1) Whelen model 295HFSQ1 electronic siren control with standard hard wired microphone and air horn button switch. The siren shall include the Electronic Mechanical Siren Tone in place of the Piercer Tone found on the 295HFSA1 siren. The siren shall be installed in cab within easy access of Driver.

SIREN SPEAKERS

Two (2) Cast Products Inc. model SH500-4 100 watt siren speakers shall be mounted under the front bumper, one (1) on the streetside and one (1) on the curbside.

SIDE SCENE LIGHTS

Four (4) Whelen 810 series (8" x 6") Opti-Scene lights with 8-32 lens and chrome flange shall be provided, two (2) each side of upper body.

Two (2) switches shall be provided, one (1) for the left side scene lights, and one (1) for the right side scene lights.

REAR SCENE LIGHTS

Two (2) Whelen 810 series (8" x 6") Opti-Scene lights with 8-32 degree lens and chrome flange shall be provided on upper rear body.

One (1) switch shall be provided for rear scene lights.

The rear scene lights shall also be activated when the apparatus is in reverse.

TRAFFIC DIRECTIONAL LIGHT

One (1) Whelen TA-850, 45" eight (8) LED light, traffic directional warning device with 30' control cable shall be located on upper rear body. The control head shall be located in the cab within easy reach of Driver.

The traffic directional light shall be surface mounted on upper rear body.

NFPA WARNING LIGHT PACKAGE

The following lighting package includes all of the minimum warning light requirements to comply with the most recent NFPA 1901 Fire Apparatus Standard.

UPPER WARNING LIGHT SYSTEM

FRONT UPPER WARNING LIGHT

One (1) Whelen Edge FN60VLED LED 60" light bar with clear lens, permanently mounted to cab roof.

Lightbar Configuration (streetside to curbside):

SECTION	INTERNAL COMPONENTS	COLOR
Section 1:	Two (2) LED's	Red Forward/Red Rear - "V" End
Section 2:	LED	Clear
Section 3:	LED	Red
Section 4:	LED	Red
Section 5:	LED	Clear
Section 6:	Two (2) LED's	Red Forward/Red Rear - "V" End

Lightbar shall be separately switched at the 12 volt control panel.

All clear lights shall shut down with parking brake when apparatus is in "Blocking" mode.

3M OPTICOM

One (1) 3M Opticom emitter light shall be installed either inside specified light bar, or on cab roof. The Opticom shall be activated with light bar and de-activated when the park brake is set and the vehicle is in blocking mode.

SIDE UPPER WARNING LIGHTS

Two (2) Whelen 900 series (9" x 7") surface mount LED lights with red lens and chrome flange shall be provided, one (1) on each side of the apparatus in the upper rearward corners.

The lights shall be switched at 12 volt control panel in cab.

SIDE UPPER WARNING LIGHTS

Two (2) Whelen 900 series (9" x 7") surface mount LED lights with red lens and chrome flange shall be provided, one (1) on each side of the apparatus in the upper forward corners.

The lights shall be switched at 12 volt control panel in cab. These lights shall be load managed and are NOT required for NFPA compliance.

REAR UPPER WARNING LIGHT

Two (2) Whelen 900 series (9" x 7") LED lights with red lens and chrome flange shall be provided on the upper rear body corners.

Two (2) Whelen 700 series (7" x 3") LED lights with red lens and chrome flange shall be provided on the upper rear body.

The lights shall be switched at 12 volt control panel in cab.

LOWER WARNING LIGHT SYSTEM

FRONT LOWER WARNING LIGHTS

Two (2) Whelen 600 series (6" x 4") LED lights with red lens and chrome flange shall be provided on the front of the cab grill area.

The lights shall be switched at 12 volt control panel in cab.

SIDE LOWER WARNING LIGHTS

Six (6) Whelen 600 series (6" x 3") LED lights with red lens and chrome flange shall be provided, three (3) each side of lower apparatus.

The lights shall be switched at 12 volt control panel in cab.

REAR LOWER WARNING LIGHTS

Two (2) Whelen 600 series (6" x 4") LED lights with red lens and chrome flange shall be provided on the rear lower body area. The two (2) warning lights shall be mounted in the top position of the specified CAST4 housing.

The lights shall be switched at 12 volt control panel in cab.

LINE VOLTAGE

GENERATOR SYSTEM

The apparatus shall be equipped with an AuraGen 8,500 watt (continuous), 120/240 volt single phase, 70/35 amp, 60 Hertz under hood electrical generator. The generator shall be belt driven from the front of the engine and shall be capable of operating from engine idle to maximum engine RPM without affecting generator operation.

The overall generator size shall be approximately 12.2" in diameter by 6.4" long. It shall be mounted under the hood in the engine compartment with vehicle and engine specific mounting brackets.

The Electronic Control Unit (ECU) shall be mounted in a weather proof location, preferably in unusable space of body compartment, but still have access for programming.

The generator control switch shall be mounted in the cab area near the Driver's seat for turning the generator system on and off.

The generator system, when engaged, shall operate normally whether the vehicle is stationary or being driven. The generator system shall NOT produce any noise greater than the engine produces during normal operation.

The unit shall produce AC current that is plus or minus 0.1 Hertz total frequency deviation, and has less than 3% total harmonic distortion.

The generator system shall NOT require any scheduled maintenance. The AuraGen generator shall carry a full three (3) year warranty from the date of installation.

On a Ford F550 with 6.0L diesel engine the secondary battery may need to be relocated to a front body compartment location.

Portable gasoline, or diesel generators, or hydraulic driven generators will NOT be an acceptable alternative to the AuraGen generator system. NO Exceptions.

MANUALS AND SCHEMATICS

Two (2) complete manuals on parts list, maintenance, wiring schematics, hydraulic schematics, circuit boards, voltage regulator board and other components shall be provided on delivery.

GENERATOR MONITORING PANEL

To properly monitor the generator performance and load demand during operation, the generator installation shall be equipped with a full instrument monitor panel.

This unit shall be manufactured by FRC model FROG-D and mounted next to the circuit breaker panel. This generator output display shall be LCD readouts for the following:

- **Voltmeter**
- **Ammeter (per line)**
- **Hour meter (accumulated run time)**
- **Frequency meter**

GENERATOR GROUNDING

The generator system shall be provided with a Hannay spring rewind grounding reel with 20' of stranded copper ground cable and heavy duty welding clamp.

One (1) end to be permanently attached to apparatus frame, forming a low resistance ground to the generator and all 120 volt circuits.

Ground rod shall be 3' long with an integrated weight hammer to drive the rod into the ground. Ground rod shall be stored in a compartment.

120/240 VOLT WIRING SYSTEM

The complete wiring and electrical installation shall conform to present National Electrical Code and the National Fire Protection Association standards.

The wiring, electrical fixtures and components shall be to the highest industry quality standards available on the market. The equipment shall be the type as designed for mobile type installations subject to vibration, moisture, and severe continuous usage. The following electrical components and wire shall be the minimum acceptable standard for this type of apparatus.

Wiring: All electrical wiring shall be fine stranded copper type THHN. The wire shall be sized to load and circuit breaker rating. Wiring shall be color coded and printed with function every 3" for easy identification.

Conduit: All 120/240 volt wiring in the apparatus body shall be through flexible moisture resistant reinforced conduit, with proper seal tight connectors and hardware.

Labeling of Equipment: All circuit breakers shall be labeled as to usage. Metal engraved or plastic coded labels shall be provided for all exterior and interior outlets indicating output amperage.

Schematic: An "As-Built" electrical wiring diagram schematic will be supplied with the completed apparatus.

Wiring: All electrical wiring shall be fine stranded copper type THHN. The wire shall be sized to load and circuit breaker rating. Wiring shall be color coded and printed with function every 3" for easy identification.

OUTLETS AND CIRCUITS

The generator shall supply the electrical equipment and outlets with wiring to circuit breaker box as outlined below. Proper circuit protection shall be installed as noted:

Two (2) 120 volt exterior outlets, one (1) each side near rear wheel well area.

The outlet(s) will be 120 volt, 20 amp twist lock style, NEMA L5-20R. Outlet(s) shall be protected by a 20 amp circuit breaker.

Two (2) 120 volt exterior outlets, one (1) each side rear of body.

The outlet(s) will be 120 volt, 20 amp twist lock style, NEMA L5-20R. Outlet(s) shall be protected by a 20 amp circuit breaker.

ELECTRIC CABLE REEL

The apparatus shall be equipped with one (1) electric cable reel(s) in exterior compartments as noted under each compartment description section.

Each cable reel shall be a Hannay ECR1616-17-18 with electric rewind, equipped with fully enclosed 45 amp, three (3) conductor collector rings.

The 12 volt reel rewind system shall be directly wired to the chassis battery system with heavy duty stranded copper wire, with guarded finger type rewind button located within easy reach of the Operator.

The wiring from the generator system shall be through Carflex electrical weatherproof conduit, with stranded copper wiring. The wiring shall terminate in a sealed conduit box at the reel with mechanical type connectors for quick removal of wiring.

One (1) 120 volt circuit for each 120 volt electric cable reel 30 amp circuit breaker protection for each circuit.

The reel shall be equipped with 175' of 10/3 SOWY black cable with a single heavy duty L5-30 twist-lock female plug at end.

Each reel shall have a 4-way roller assembly to permit cable to feed directly off the reel and away from compartment. Roller assemblies shall have stainless steel roller with Delrin bearing inserts and die cast corner mounting blocks.

Cable shall have a molded plastic ball clamp to stop hose at 4-way roller.

ELECTRICAL JUNCTION BOX

There shall be one (1) Extenda-Lite junction box(s) with snap shut outlet covers and backlit face plate. Junction box shall be equipped with a 1' pig tail with twist lock male plug for connecting to cable reel.

A bracket shall be installed on compartment wall to store junction box when not being used.

The electrical junction box shall have a cast aluminum finish.

The outlet(s) will be 120 volt, 20 amp twist lock style, NEMA L5-20R. Outlet(s) shall be protected by a 20 amp circuit breaker.

COMMAND LIGHT - KNIGHT TOWER

The apparatus shall be equipped with one (1) all-electric floodlight tower. The unit shall not require tapping into vehicle braking system to be operated, eliminating the chance for vehicle brake problems. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the all-electric light tower specified. NO EXCEPTIONS.

The light tower shall have six (6) weatherproof, 500 watt, 120 volt quartz halogen lights. Light heads shall be mounted in three (3) pairs, giving two (2) vertical lines of three (3) when the lights are in the upright position. The light tower shall have slip-rings for a full 360 degree rotation and capable of rotating either direction from a stowed position, NO EXCEPTIONS.

The light tower shall be capable of overhanging the side or back of the vehicle (depending on mounting location) to provide maximum illumination and a warming area adjacent to the vehicle, NO EXCEPTIONS. Positioning of the light bank shall be accomplished with maintenance free, heavy duty 12 volt linear actuators.

The light tower shall be all aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

Light tower shall be controlled with a hand-held umbilical line remote control. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature.

Command Light controls shall include:

1. Three (3) switches, one (1) for each light bank.
2. One (1) light bank rotation switch.
3. One (1) switch for elevating lower stage.
4. One (1) switch for elevating upper stage.
5. One (1) light to indicate when light bank is out of roof nest position.
6. One (1) light to indicate when light bank is rotated to proper nest position.
7. One (1) "On/Off" switch for the top mounted strobe (optional)

The controls shall be located per the itemized compartment list.

The light tower shall have a full extension over 7' from mounted position and extend from nest position to full upright in 15 seconds. The overall size of nested light tower shall be approximately 23" wide x 47" long x 11 3/4" high, and weight approximately 120 lbs.

A flashing warning light shall be provided in cab, indicating when a light tower is not in nested position as required by NFPA 1901. The operational envelope of the mast shall be automatically illuminated whenever the mast assembly is being raised, lowered, or rotated as required by NFPA 1901.

The Command Light shall be covered by a one (1) year limited warranty from defects in materials and workmanship. An operation, maintenance, and parts manual shall be provided with the delivered apparatus.

The floodlight tower shall have a strobe indicator located on the top of the upper section. The strobe light shall have a green cover.

RECESSED LIGHT TOWER

The specified light tower(s) shall be recessed into the roof of the apparatus body so that no part of the light tower extends above roof line. The recessed area shall have two (2) water drain holes (in opposite corners) with flexible 1" diameter hose routed to the area below the body.

HYDRAULIC RESCUE SYSTEM

The following hydraulic equipment shall be furnished and installed as described:

HYDRAULIC POWER UNIT

A Hurst model JL-AC-SI, 3 HP, 240 VAC electric hydraulic power unit shall be provided and installed in compartment as noted under the individual compartment description section.

The power unit shall be capable of simultaneous rescue tool operation of two (2) individual tools. It shall be mounted in compartment, but easily removable from the apparatus for maintenance purposes. Power unit shall be approx. 17.3" wide x 19.7" high x 18.9" deep and weight 88 lbs.

A 240 VAC twist lock receptacle with proper amperage rating shall be located in compartment where the power unit is to be stored. A switch shall be provided on wall within easy reach of operator for turning the power unit ON/OFF.

One (1) 240 volt twist lock outlet(s) located inside exterior body compartments as listed in the itemized compartment descriptions.

The outlet(s) will be 240 volt, 20 amp twist lock style, NEMA L6-20R. Outlet(s) shall be protected by a 20 amp circuit breaker.

HYDRAULIC SPREADER

Furnished with the apparatus will be the following hydraulic rescue tool spreader:

- One (1) Hurst model JL-32B hydraulic rescue tool spreader
- One (1) Hurst chains and shackles package for the JL-32B spreader

HYDRAULIC RESCUE TOOL CUTTER

Furnished with the apparatus will be the following hydraulic rescue tool cutter:

- One (1) Hurst model X-tractor hydraulic rescue tool cutter

HYDRAULIC RESCUE TOOL RAMS

Furnished with the apparatus shall be the following hydraulic rescue rams:

- One (1) Hurst model 20C hydraulic ram (15" - 20")
- One (1) Hurst model 30C hydraulic ram (23" - 36")
- One (1) Hurst model 60C hydraulic ram (35"- 60")

HYDRAULIC HOSE REEL

The apparatus shall be equipped with two (2) hydraulic hose reel(s) in the exterior compartments as noted under the individual compartment description section.

Hydraulic hose reel shall be Hannay E2014-17-18 high pressure, electric rewind, dual hydraulic hose reel with a capacity of 100' of dual hose.

The 12 volt electrical rewind circuit shall be directly wired to the chassis battery system with heavy duty stranded copper cable. The rewind button shall be located adjacent to the hose reel within easy access of operator.

Each reel shall have a 4-way roller assembly to permit cable to feed directly off the reel and away from compartment. Roller assemblies shall have stainless steel roller with Delrin bearing inserts and die cast corner mounting blocks.

Hose shall have a molded plastic ball clamp to stop hose at 4-way roller.

The specifications for the hose are as follows:

Brand:	Hurst
Length of dual hose:	100' single length
Inside Diameter:	1/4"
Outside Diameter:	1/2"
Burst Pressure:	5,000 lbs.
Fittings:	Quick connect couplings
Color:	Green or Orange or Blue

POWER UNIT TO REEL PIGTAIL(S)

There shall be two (2) pigtail(s) to connect the reel to hydraulic rescue tool pump. These lines shall be the supply and return lines for rescue tool operation. Each reel shall be equipped with quick disconnect type fittings for hose removal.

HYDRAULIC RAM MOUNTING

There shall be mounting provisions for three (3) customer supplied hydraulic ram(s).

Make: Hurst Model: 20C, 30C, and 60C

HYDRAULIC CUTTER MOUNTING

There shall be mounting provisions for one (1) customer supplied hydraulic cutter(s).

Make: Hurst Model: X-Tractor

HYDRAULIC SPREADER MOUNTING

There shall be mounting provisions for one (1) customer supplied hydraulic spreader.

Make: Hurst Model: 32B

WATER SYSTEM

The following equipment shall be furnished and installed to supply water to the emergency scene:

FIRE PUMP SYSTEM

The apparatus shall be provided with a water pump system utilizing the chassis Power-Take-Off. The pump shall be a Hale CBP25 booster pump capable of pumping 250 GPM at 150 PSI. The pump shall be installed per manufacturers instruction.

The following controls shall be provided:

1. Transmission PTO control with indicator light.
2. Manual engine throttle.

A pump master drain shall be provided.

PUMP DRIVE SYSTEM

The water system pump shall be driven by a Chelsea PTO mounted to a Chelsea split shaft drive. The main chassis drive line shall be modified to accept the Chelsea split shaft drive unit using hollow tube type drive lines with heavy duty universals and splined shafts to allow movement between chassis components and pump.

The engagement of the PTO shall be in the chassis cab with a rocker switch and red pilot light to note engagement of the PTO.

The power supply to the PTO engagement control shall be wired to a neutral position transmission switch to prevent engagement unless the vehicle is stopped.

Two (2) green indicator lights shall be supplied in the chassis cab. One (1) light shall be energized when the chassis transmission is in neutral and shall be labeled "OK TO PUMP", the second light shall engage when the pump drive (PTO) has been engaged and shall be labeled "PUMP ENGAGED".

Two (2) indicator lights (one (1) red and one (1) green) shall be supplied at the Pump Operator's panel adjacent to the engine hand throttle. The green light shall be energized when both the chassis transmission is in neutral and the pump drive (PTO) has been engaged. Green light shall be labeled "WARNING, DO NOT OPEN THROTTLE UNLESS LIGHT IS ON". The red light shall be energized whenever the chassis transmission is not in neutral, and the ignition switch is activated. Red light shall be labeled "DANGER, DO NOT OPEN THROTTLE".

MASTER DRAIN VALVE

There shall be one (1) *Class 1* manifold type drain valve installed in the pump compartment. All pump drains shall be connected to the master drain valve. The drain valve shall be controlled adjacent to the pump panel. The control shall be a hand wheel knob marked "open" and "closed". Each drain port shall be completely independent where the master drain valve will not allow water or air flow between any two (2) inlet ports.

PRIMING SYSTEM

There shall be one (1) Waterous electric, positive displacement, rotary vane type priming pump furnished and installed in the pump compartment. The primer shall be automatically lubricated from a large reservoir. The primer shall be capable of priming the pump through a 20' section of suction hose with a 10' lift, within 30 seconds.

PRIMER CONTROL

The primer shall activated by a pull/push "T" handle control.

DISCHARGE RELIEF VALVE

There shall be one (1) Waterous pressure relief valve on the discharge side of pump. Relief pressure is set by the Operator at the pump panel, and discharges to the suction side of pump. An amber pilot light is provided at the control to indicate when relief valve is open.

FOAM SYSTEMS

There shall be one (1) fully automatic electronic direct injection foam proportioning system furnished and installed on the apparatus. The system shall be capable of Class A foam concentrate. The proportioning operation shall be based on an accurate direct measurement of water flows with no water flow restriction. The foam system shall be installed in accordance with the manufacturers recommendations.

The system shall be equipped with a control module. It shall be installed on the pump operators panel and enable the pump operator to perform the following functions:

- Activate the foam system.
- Change foam concentrate proportioning rates from .1% to 1%.
- Flash a “low concentrate” warning light when the foam concentrate tank runs low of concentrate and in two minutes if foam concentrate is not added to tank shut the foam concentrate pump down.

The foam system shall have a 12 or 24 volt, 1/3 hp electric motor driven positive displacement piston type foam concentrate pump with a rated capacity of .01 to 1.7 gpm @ 150 psi, with operating pressures up to 400 psi. The system will draw a maximum of 30 amps @ 12 VDC or 15 amps @ 24 VDC.

Note: The foam system shall be plumbed to the following discharges:

- Front cross lay discharge

FOAM TANK

The water system booster tank shall be provided with a 20 gallon integral foam tank. Foam tank shall have a 1" NPT female flange with sump. A foam expansion fill tower shall also be provided at top of tank.

FOAM TANK LEVEL GAUGE

There shall be one (1) *Class1* Intelli-tank foam tank level gauge for indicating foam tank level. The tank level gauge shall indicate the liquid level on an easy to read display and show increments of 1/20 of a tank.

Each tank level gauge system shall include:

- A pressure transducer that is mounted on the outside of the tank in a easily accessible area
- A super bright LED bar graph display with a visual alarm at 1/4 of a tank. The display shall also provide an output to activate an audible alarm or secondary visual alarm at 1/4 of a tank
- A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power

PLUMBING SPECIFICATIONS

All auxiliary inlet, discharge and pre-connect plumbing shall be fabricated with 304 stainless steel pipe and fittings or high pressure hose with stainless steel couplings. All plumbing shall be sized to provide sufficient water flow for each inlet or discharge.

SUCTION(S)

STREETSIDE INTAKE

There shall be one (1) 2-1/2" gated intake(s) located on the streetside of the apparatus. Each 2-1/2" intake shall terminate with a 2-1/2" NSTF chrome plated swivel adapter. There shall be one (1) 2-1/2" NSTM chrome plated plug and chain for each intake.

There shall be one (1) *Class 1* manual type drain valve installed for the above plumbing item. The drain valve shall be a 3/4" ball valve style. There shall be a 1/4 turn control to manually open the drain valve when the line is under pressure. The valve shall be located at the pump panel and shall be plumbed to drain the lowest point in the plumbing.

- One (1) Elkhart, 2-1/2" valve
    - This valve shall be controlled with a lever directly attached to the valve

One (1) 1-1/2" direct tank fill located at pump panel, with a check valve, adapter, cap and drain valve.

TANK TO PUMP LINE

There shall be one 2 1/2" ball valve with push/pull control to operate the tank to pump water flow. The connection between the tank and the pump shall be capable of the flow recommendations as set forth in NFPA Pamphlet 1901, latest revision. A non-collapsible flexible hose shall be incorporated into the tank to pump plumbing to allow movement in the line as the chassis flexes to avoid damage during normal road operation. There shall be one 3" check valve incorporated into the plumbing to protect the tank from water back flowing through the pump.

DISCHARGES:

The completed unit shall have the following discharge(s).

STREETSIDE DISCHARGE(S)

There shall be one (1) 2-1/2" gated discharge(s) located in this area. Each discharge shall terminate with a down sweep elbow with NSTM threads. Each discharge shall include:

- One (1) Elkhart, 2-1/2" valve
  - This valve shall be controlled with a lever directly attached to the valve
- One (1) Class 1 automatic type drain valve.
  - One (1) 2-1/2" liquid filled gauge(s)
  - This gauge(s) shall have a white background with black text
  - The above gauge shall have a range from 0 to 400 psi

MISCELLANEOUS DISCHARGE(S)

CROSSLAY(S)

There shall be one (1) Cross lay(s) located per the itemized compartment list. Each cross lay shall be transverse of the apparatus body with access from either side. Each hose tray shall be removable from the compartment, out either side with a roller mechanism to assist in removal.

Each cross lay shall have a storage capacity of 150' of 1-1/2" double jacket hose and a pre-connected nozzle. There shall be a continuous swivel elbow for each cross lay to prevent hose kinks and to provide the most efficient payout of the hose load.

- One (1) Elkhart, 1-1/2" valve
  - This valve shall be controlled with a lever directly attached to the valve
- One (1) Class 1 automatic type drain valve.
  - One (1) 2-1/2" liquid filled gauge(s)
  - This gauge(s) shall have a white background with black text
  - The above gauge shall have a range from 0 to 400 psi

TANK REFILL

There shall be one (1) 1" pump to tank fill line.

PUMP PANEL

The pump controls shall be mounted on an aluminum control panel, which shall have a black powder coat finish. The panel shall be bolted in place, allowing it to be removed to gain access to plumbing components like the valves and manifold.

PUMP PANEL LOCATION

The pump control panel shall be located in Compartment #1 (Streetside Front Compartment).

In addition to items like a water or foam tank level gauge, the pump panel shall include the following items:

PUMP PANEL ACCESS

The pump panel shall be covered by the Compartment #1 (Streetside Front) roll-up compartment door. The roll-up compartment door shall protect the pump control panel from the environment.

ENGINE STATUS CENTER

The apparatus shall be equipped with the *Class1* ENFO III Engine Information Display for the pump panel. The ENFO III shall provide engine RPM, system voltage display and alarm, engine oil pressure display and alarm, and engine temperature display and alarm. The ENFO III shall use the SAE J-1587 data bus for its information and shall not require any additional sensors to be mounted.

ENGINE THROTTLE CONTROL

There shall be one (1) *CLASS 1* EV2 vernier type throttle control to set the engine RPM.

MASTER DISCHARGE GAUGE

There shall be one (1) 3-1/2" liquid filled gauge, which shall display the Master Discharge Pressure.

MASTER INTAKE GAUGE

There shall be one (1) 3-1/2" liquid filled gauge, which shall display the Master Intake Pressure.

- This gauge(s) shall have a white background with black text
- The above gauge(s) shall have a range from -30" - 0 - 600 psi

POLYPROPYLENE PLASTIC WATER TANK

The water tank shall be 250 U.S. gallons capacity.

The tank shall be constructed of 1/2" thick polypropylene. All seams in the tank shall be nitrogen welded inside and out. Top of booster tank shall be fitted with eyes for installation or removal. The swash partitions shall form inner compartments within the tank.

Tank shall be warranted to be free from manufacturing defects in material and workmanship for the service life of this vehicle.

The tank will have a combination vent and manual fill tower. The fill tower will be constructed of 1/2" polypropylene and will be a maximum dimension of 8" x 8" outer perimeter. Tower will have a 1/4" screen and hinged cover. Inside the fill tower half way down from the top, will be fastened a vent/overflow pipe. The vent overflow is schedule 40 polypropylene pipe with a minimum 3-1/2" I.D. that will run through the tank and piped behind the rear wheels if possible.

Tank shall have a 8" x 6" minimum sump with a 3/4" thick bottom. The sump shall be provided with a 2-1/2" IPS flange located at the bottom of sump for tank-to-pump line and tank drain.

One (1) 1" IPS flange for pump-to-tank line shall be provided in tank with flow deflectors to break up stream of water entering the tank.

The tank will be cradle mounted. The tank shall be insulated from the floor with 1/4" x 3" wide, 60D hardness rubber strips.

The tank shall be located in compartment directly over the rear axle.

WATER TANK LEVEL GAUGE

There shall be one (1) *Class1* Intelli-tank water tank level gauge for indicating water tank level. The tank level gauge shall indicate the liquid level on an easy to read display and show increments of 1/20 of a tank.

Each tank level gauge system shall include:

- A pressure transducer that is mounted on the outside of the tank in an easily accessible area
- A super bright LED bar graph display with a visual alarm at 1/4 of a tank. The display shall also provide an output to activate an audible alarm or secondary visual alarm at 1/4 of a tank
- A set of weather resistant connectors to connect to the digital display, to the pressure transducer and to the apparatus power

EQUIPMENT

The following equipment shall be furnished with the completed apparatus:

ASSORTED FASTENERS

One (1) container of assorted stainless steel nuts, bolts, screws and washers as used in the construction of the apparatus shall be provided with the delivered unit.

WHEEL CHOCKS

There shall be two (2) NFPA approved aluminum wheel chocks for 32" diameter tires provided.

The wheel chock(s) shall be mounted on apparatus, location as per Fire Department.

LADDER

One (1) Duo-Safety 701-10 10' aluminum attic ladder(s) shall be provided with completed unit. Ladder mounting shall be per itemized compartment list, or specified by Fire Department.

PIKE POLE

One (1) Duo-Safety 10' pike pole, mounting to be specified by Fire Department.

FLASHLIGHTS

Two (2) Streamlight Litebox rechargeable flashlight(s) and charger(s) shall be provided.

The flashlight(s) shall be mounted on apparatus, location as per Fire Department.