Maui Police Department

SVI Trucks Production Specification

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 an emergency services vehicle designed for severe duty applications.

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 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, Maui Police Departmentsystem, etc., that is available. The Maui Police Department 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 Maui Police Department. 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 website where the Maui Police Department will be able to view digital images of their apparatus 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 apparatus.

NFPA REQUIRED MANUALS

The construction, operation, and service documentation shall be provided on a CD-ROM. These manuals shall be written in a "step by step" format for ease of reference. There shall be two (2) copies of the CD provided with the apparatus as standard.

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 three hundred sixty five (365) 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 Maui Police Department 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 Maui Police Department 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 Maui Police Department (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 Maui Police Department. 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 Maui Police Department 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 TESTS:

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.

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 determine 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.

INSPECTION TRIPS

The Manufacturer shall provide nine (9) individual inspection trips to the factory where the apparatus will be built. The cost of transportation, food, and lodging shall be borne by SVI Trucks.

The trips shall be configured as follows:

- Three (3) Maui Police Department members for a preconstruction conference
- Three (3) Maui Police Department members for a pre-paint inspection
- Three (3) Maui Police Department members for a final inspection of the completed apparatus

SHIPPING INSTRUCTIONS

The unit shall be delivered to a west coast port in preparation for ocean freight shipment to Kahului, Maui, Hawaii. Only roll-on roll-off type shipping is acceptable, NO container, or rack type shipping is allowed for this unit. The preferred location is below the main deck, or located under an overhang for protection from salt spray. If the unit is not shipped on a lower deck the entire unit SHALL be shrink wrapped and taped off at the lower body to protect the unit from salt spray.

DELIVERY AND DEMONSTRATION

The contractor shall be responsible for the delivery of the completed unit to the Maui Police Departments location. On initial delivery of theapparatus, the contractor shall supply a qualified representative to demonstrate the apparatus and provide initial instruction to representatives of the Maui Police Department regarding the operation, care, and maintenance of the apparatus and equipment supplied at the Maui Police Departments location.

The delivery engineer shall set delivery and instruction schedule with the person appointed by Maui Police Department.

After delivery of the fire apparatus, the Maui Police Department shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment as defined in NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, and NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*.

Inc. $ from CO - CA port.
Ocean freight $ by HT&T

CAB AND CHASSIS

The cab and chassis shall be a Spartan Chassis, Inc. Flat Floor Diamond, model DA4AH, extended long four door, 24" raised roof over crew and driver-officer area, aluminum tilt cab, built specifically for the fire service by a publicly held U.S. parent company, specializing in chassis design for all fire service applications. The cab and chassis shall meet the requirements of the National Fire Protection Association Standard 1901, (2003 edition or latest edition).

FLAT FLOOR ELFD 24" RAISED ROOF TILT CAB

The cab shall be a Spartan Chassis, Inc. Flat Floor, ELFD (extended long four door), 24" raised roof, aluminum tilt cab, capable of seating ten (10) firefighters.

The roof shall be raised 24" with windows in the upper portion above the doors.

The raised roof shall extend from the back of the cab to the center of the front doors to provide additional headroom for the driver and officer.

The cab shall be of the Eurospace interior design allowing for easy communication inside the cab. The cab overall length shall be 150.38" with 74.00" from the centerline of the front axle to the back of the cab.

The rear cab wall shall be .090" thick aluminum. The rear floor to the headliner height shall be 79.00".

The cab front skin and floor shall be .190" thick aluminum. The inside width shall be 90.00" and the front floor to the headliner height above the driver and officer shall be 82.00".

All glass used in the cab shall be automotive tint. The windshield shall have a maximum of 2890 sq.in. area and be of the wraparound design 52.88" wide and 27.88" high for maximum visibility. Left and right windshield shall use the same interchangeable glass.

A molded rubber 11" grab handle shall be provided on the hinge post inside the cab at both the driver and officer door for entering and exiting the cab.

The driver and officer seats shall have an 8.25" high x 12.69" wide x 15.13" deep compartment in the seat box beneath them. The compartment shall have a hinged door with an opening of 6.00" high x 12.50" wide.

Intermittent electric wipers with a single motor and electric powered "wet arm" type windshield washers shall be provided. Access to the wiper motor shall be through the driver's side headlamp module located on the front cab fascia.

CAB DOORS

The cab doors shall be flush, full length type with hidden .375" stainless steel door hinges. All doors shall be equipped with exterior pull handles, suitable for use with firefighter mittens, and keyed alike locks that are designed to prevent accidental lockout.

The interior latches shall be black flush paddle type, which are incorporated into an upper door panel.

The front doors shall measure 43.00" wide x 77.00" high with .13" thick aluminum skins. The front steps shall be a two (2) step configuration with the lower step constructed of an open grate material and the intermediate step shall be covered with embossed, NFPA compliant aluminum tread plate.

The following measurements shall apply:
First step: 11.44" deep x 31.13" wide
Intermediate step: 8.75" deep x 33.00" wide
Ground to first step: approximately 21.00"
First step to intermediate step: 11.00"
Intermediate step to floor: 11.00"

The rear doors shall measure 34.00" wide x 97.00" high with .13" thick aluminum skins. The rear steps shall be a two (2) step configuration with the lower step constructed of an open grate material and the intermediate step covered with embossed, NFPA compliant aluminum tread plate.

The following measurements shall apply:
First step: 12.13" deep x 20.44" wide
Intermediate step: 10.50" deep x 23.00" wide
Ground to first step: approximately 21.00"
First step to intermediate step: 12.50"
Intermediate step to floor: 12.50"

DOOR HANDLES EXTERIOR - CHROME

The cab door exterior pull handles (4) shall be extruded aluminum with a polished chrome plated finish.

Each handle shall include an aluminum scuff plate with a polished chrome finish. The scuff plate shall be 6.25" tall x 10.50" wide.

FRONT AND REAR POWER DOOR WINDOWS

The front doors shall have a full power window 27.00" x 26.00" with a total glass area of 702 square inch each.

The rear doors shall have a power window 27.50" x 26.00" with a total glass area of 715 square inch each.

The driver shall be able to control all windows. The officer and crew area windows shall have individual controls.

FABRIC COVERED SEATS - DURABLE BALLISTIC POLYESTER

The seats shall be covered with a high strength, wear resistant fabric of durable ballistic polyester. A PVC coating is bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids.

BLACK SEAT COLOR

All seats supplied on the chassis shall be black in color.

SEATBELT WARNING SYSTEM

A seatbelt use warning system shall be installed in the chassis. The system will provide a visual and audible warning when all of the following conditions are met.

1.) Any seat is occupied (sixty pounds minimum).
2.) The corresponding seat belt(s) remains unfastened.
3.) The park brake is released.

Once activated, the visual and audible indicators will remain active until all occupied seats have the seat belts fastened.

DRIVER SEAT

The driver's seat shall be an eight-way electric H.O. Bostrom Sierra high back seat and shall include a tapered and padded seat cushion and back with mechanical suspension.

The seat shall be an ABTS (All Belts to Seat) type integrated red three-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The female seat belt clasp shall extend up from the seat base ~ 14" to be within easy reach of the occupant. The ABTS feature is an engineering break through where the passenger restraint harness is built into the seat module and meets the twenty "G" load test.

OFFICER SEAT

The officer's seat shall be an eight-way electric H.O. Bostrom Sierra high back seat and shall include a tapered and padded seat cushion and back with mechanical suspension.

The seat shall be an ABTS (All Belts to Seat) type integrated red three-point shoulder harness with lap belt and an automatic retractor built into the seat assembly. The female seat belt clasp shall extend up from the seat base ~ 14" to be within easy reach of the occupant. The ABTS feature is an engineering break through where the passenger restraint harness is built into the seat module and meets the twenty "G" load test.

ELFD COMPARTMENT

The cab shall contain an exterior compartment on each side of the cab behind the rear doors. The compartment opening shall be 16.25" wide x 21.19" high. The compartment size shall be 17.84" wide x 21.19" high x 21.19" deep. The compartment shall have a 17.13" wide, 32.00" high and 1.50" thick hinged box pan style flush mount door with a locking bent D-ring slam latch with door switch to activate open compartment warning light in cab.

EVOLUTION FRONT FASCIA

The front cab fascia shall be constructed of impact resistant FRP (fiberglass reinforced plastic), which will attach to the front cab skin and act as a fascia only.

The front fascia will cover the front aluminum cab structure from the bottom of the windshield down to the bottom of the cab. The front cab fascia shall have provisions for two single (Hi/Low Beam) headlamp modules (with integrated side/turn marker lamps) and up to four warning lamps.

The front fascia shall allow access to check and fill the engine oil and wiper washer fluid. Access is also provided for servicing the windshield wiper motor and linkage, ember separator, headlamps, electrical bulkhead connectors, transmission ECU and the multiplex V-Mux control.

The front fascia grille shall be comprised of a stainless steel grille and two additional plastic "chromium nickel plated" side grilles.

WARNING LIGHTS

Two (2) Whelen 4x6 SUPER LED blue warning lights shall be installed on the cab fascia below the headlamps.

light to be super LED blue

HEADLIGHTS

A hinged headlamp and combination turn signal/side marker lamp module shall be part of the cab front fascia. Two (2) rectangular halogen combination high/low beam headlamps shall be provided with an integrated side marker/turn signal lamp. The headlamps shall be equipped with a "Daytime Running" light feature, which will illuminate the headlights to 80% brilliance when the master switch is in the "On" position and the parking brake is released.

FLAT FRONT GRILLE - GLADIATOR EVOLUTION

A two (2) piece, hinged stainless steel flat front grille contoured to shape of front fascia shall be installed on the front of the cab. The upper portion of the grille will be hinged and will have two (2) flush push button latches that allow access to the front fluid fills of the cab. Included are two (2) chrome vacuum formed ABS composite intake grilles located outboard of the stainless steel grille. Additional air intake openings are supplied in the front fascia located below the stainless steel grille. A minimum total free air intake of 677.0 square inches shall be provided. See attached PDF file for clarification.

CAB MIRRORS

Two (2) Ramco model 9000-FFHR-800HR bus style mirror heads shall be mounted on the cab doors. The heated full face flat glass and heated convex mirrors on top of the mirror heads shall be remote controlled with switches on the dash. The mirrors shall be attached to chrome plated cast aluminum arms. The mirror head backs are chrome plated injection molded ABS composite.

CAB CRASH TEST ECE-29

Spartan Chassis, Inc. has successfully submitted their extruded flat floor cab to the International crash test ECE-29, Addendum 28, revision 1. As part of the ECE regulation 29 test, the frontal area of the cab is struck by a 3,700 pound pendulum weight. The weight is brought back to a sixty degree angle and then the weight is released and allowed to swing forward, imparting some 32,600 lb.ft. of force to the cab front face. The cab must be so constructed that after the test, there will be minimal intrusion of cab structure into the passenger area. Note: After the test the Spartan cab doors remained usable for both entry or exit. Also, as part of the test the cab roof must withstand a static load bearing test. The Spartan cab withstood a weight of over 60,000 pounds without permanent damage or collapse. The above tests were witnessed by and attested to by an independent third party. The test results were recorded on/by cameras, high speed imagers, accelerometers and strain gauges. Notarized copies of the letters verifying the test results and videos of said test are available upon request.

ONE YEAR CHASSIS WARRANTY

The chassis manufacturer shall warrant to the original purchaser the custom fire truck chassis for a period of twelve (12) months with the exception of the actual fire apparatus chassis frame which carries a lifetime warranty. The warranty period shall begin on the date the vehicle is delivered to the original purchaser. The warranty may include conditional items, which shall be listed in the detailed warranty document that shall be provided upon request.

CAB WARRANTY

The cab shall be warranted for a period of ten (10) years. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

PAINT FRAME AND CHASSIS UNDER CARRIAGE

The chassis under carriage consisting of frame, axles, driveline running gear, battery boxes, air tanks and other assorted chassis mounted components shall be painted with standard black paint. Paint shall be applied before airlines and electrical wiring is installed.

CHASSIS WHEELBASE

The chassis wheelbase shall be 238", CA shall be 164", AF shall be 100.5".

FRAME

The frame side rails shall be black powder coated "C' channel type 10.25" x 3.5" x .38" with an inner channel 9.44" x 3.13" x .38" of 110,000 psi minimum yield high strength steel, a RBM of 3,315,214 inch pounds and a section modulus of 30.14 cubic inches.

A minimum of seven (7) fully gusseted bolted assembly crossmembers shall be installed using grade 8 flanged head bolts and flanged lock nuts.

The area between the axle suspension hangers shall be free of any holes or fasteners in the flanges. No welding shall be incorporated in attachment of components. All frame dimensional cutting shall be by a plasma cutter. All relief areas shall be cut in with a minimum 2" radius at intersection points with ground smooth edges to prevent a stress focal point.

The frame and crossmembers shall carry a lifetime warranty to the original purchaser.

OVERALL HEIGHT

The height of the vehicle shall not exceed 135" from the ground.

FUEL TANK

The fuel tank shall have a minimum capacity of sixty-eight (68) gallons. The baffled tank shall be made of 14 gauge phosphate coated steel with chromate epoxy exterior finish.

The fuel tank shall be mounted under the frame, behind the rear axle on strap hangers with a "U" strap bolted front and rear so the tank can be easily dropped and removed. Tank shall have vent port to facilitate rapid filling without "blow-back". A roll over ball check vent shall be installed.

Dual draw tubes and dual sender ports shall be installed. A 2" NPT fill ports shall be available for right or left hand fill. A 1/2" NPT drain plug shall be centered in the bottom of the tank.

The standard fuel line for ISC and ISL engines will be nylon material rated for diesel fuel. All other engines will be steel wire braid reinforced rubber.

FRONT BUMPER

A one piece, 10 gauge 304 polished stainless steel front bumper shall be provided. The bumper shall be 101" and 12" high, two (2) rib wrap-around type.

The bumper shall be extended 6" ahead of the cab.

AIR HORNS

Dual Grover Stuttertone 21" air horns shall be recessed in the front bumper, one (1) each on the driver and officer inboard mounting positions. A 3/8" airline "teed" equal distance from each horn shall be installed.

ADDITIONAL AIR RESERVOIR

An additional 1200 cubic inch air reservoir shall be installed and isolated to prevent depletion of the air to the air brake system and to act as a supply tank for operating air equipment. It shall be plumbed with a 90 psi pressure protection valve on the reservoir supply side.

BUMPER APRON

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

CHROME PLATED TOW EYES

Two (2) chrome plated tow eyes shall be installed through the bumper. The eyes shall be fabricated from 3/4" thick #1020 ASMT-A36 hot rolled steel. The inside diameter of the eye shall be 2.00" and have a chamfered edge.

AIR HORN ACTUATION

Air horn actuation shall be accomplished by the steering wheel horn button and a right side officer's mounted Linemaster SP491-S81 foot switch.

SPEAKERS CPI

Two (2) Cast Products Inc. bright aluminum 100 watt speakers shall be recessed in the front bumper, one each outboard on the driver's and officer's side.

The speakers shall be bolted to bumper by means of a polished aluminum trim ring on the front face of the bumper.

FRONT AXLE

The front axle shall be an ArvinMeritor MFS-18 with a 3.74" drop and a 71.00" KPI. It shall have a capacity of 18,000 pounds GAWR.

The springs shall be taper type, four (4) leaf, 54" long and 4" wide with a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counterbore and lubrication land off crossbore with grease fitting. The spring capacity shall meet or exceed the capacity of the front axle.

The hydraulic power assist steering gear shall be a TRW TAS-85. A Vickers hydraulic power steering pump shall be gear driven from the engine. The steering ratio shall be 23.3:1 and have 6.2 turns stop to stop.

FRONT TIRES

The front tires shall be Michelin 315/80R 22.5 20PR "L" tubeless radial XZA1 highway tread with 22.5 x 9.0 ten (10) stud disc wheels. The tires and wheels shall be rated at 18,000 pounds.

FRONT AXLE CRAMP ANGLE

The hub piloted, MFS-18 model front axle cramp angle shall be a minimum of 50 degrees when using the 315/80R 22.5 front tires.

FRONT WHEELS ALCOA ALUMINUM

The front wheels shall be Alcoa hub piloted, 9.00" x 22.5" polished aluminum wheels.

FRONT WHEEL BEARINGS OIL LUBRICATED

The front axle wheel bearings shall be oil lubricated and come equipped with an oil level visual inspection window.

FRONT SHOCK ABSORBERS

Two (2) Bilstein monotubular design, nitrogen gas charged shock absorbers shall be part of the front axle suspension. Bilstein shall warranty the shock for a period of five (5) years.

DISC BRAKES

The front axle shall have ArvinMeritor (Rockwell) ADB-1560 disc type brakes with 15" vented rotors providing a total of 120 sq.in. of braking area and automatic slack adjusters.

CHASSIS ALIGNMENT

The chassis frame rails shall be cross checked for length and squareness. Front and rear axles shall be laser aligned. Tires and wheels shall be aligned and toe-in set on the front tires at the chassis manufacturer's facility.

The completed apparatus should be rechecked for proper alignment after the chassis has been fully loaded.

STEERING COLUMN AND WHEEL

The Douglas Autotech steering column shall be a seven (7) position tilt and 2.25" telescopic type with an 18" steering wheel. The steering wheel shall be covered with black absorbite padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

FRONT MUD FLAPS

The front wheel wells shall have mud flaps installed on them.

REAR AXLE

The rear axle shall be an ArvinMeritor model #RS-24-160 with single reduction gearing and shall have a rated capacity of 24,000 pounds GAWR.

TOP SPEED

The top speed of the vehicle shall be approximately 65 MPH +/-2 MPH at governed engine RPM.

REAR BRAKES

The rear brakes shall be ArvinMeritor 16.5" x 7" S-cam type with ArvinMeritor automatic slack adjusters.

ABS BRAKE SYSTEM

A Meritor Wabco four sensor four modulator anti-lock braking system shall be installed on the front and rear ArvinMeritor axles for safer vehicle control during braking and reduced stopping distance in skid conditions.

The electronic monitoring system shall incorporate diagonal circuitry to monitor wheel speed during braking through a sensor and tone ring on each wheel.

A dash mounted vacuum formed ABS composite lamp shall be provided to notify the driver of a system malfunction. A momentary test switch shall be installed to test the system for diagnostic codes.

The vacuum formed ABS composite system shall automatically disengage the auxiliary braking system device when required.

The Meritor Wabco vacuum formed ABS composite system shall have a three (3) year or 300,000 mile warranty provided by Meritor Wabco Vehicle Control Systems.

REAR TIRES

The rear tires shall be Michelin 11R 22.5 16PR "H" tubeless radial XZE highway tread with a minimum rating of 24,020 pounds.

REAR WHEELS ALCO ALUMINUM

The single rear axle wheels shall be Alcoa hub piloted, 8.25" x 22.5" polished aluminum wheels.

OIL LUBRICATED REAR WHEEL BEARINGS

The rear axle shall have oil lubricated wheel bearings.

REAR SUSPENSION

The rear single axle suspension shall be an Aero Glide air suspension with a single air bag on a tapered forged drop leaf spring with adjustable torque rods and shock absorbers.

Dual air height control valves shall be installed to insure equal frame height on both sides of the vehicle regardless of the load.

The rear air suspension shall have a maximum rated capacity of 24,000 pounds GAWR.

SINGLE REAR AXLE AIR BRAKE SYSTEM

A FMVSS 121 and NFPA rapid build-up, compliant air brake system shall be provided. It shall include three (3) air reservoirs with a total of 4136 cubic inch of air capacity.

A Bendix E6 floor mounted tread valve shall be mounted in the cab for service brake control.

A Bendix PP1 control valve shall operate the parking brake system.

Emergency braking shall be controlled through the Bendix treadle valve and modulated through a Meritor Wabco inversion valve.

The rear axle spring brakes are to automatically apply in case of air pressure loss below 60 psi with a mechanical means for releasing the spring brake chambers.

BRAKE DUST SHIELDS

The single rear axle shall be equipped with brake dust shields.

ALCOA DURABRIGHT COATING

The Alcoa aluminum wheel will have the Alcoa Durabright wheel treatment as an integral part of the wheel.

AXLE COVER KIT STAINLESS STEEL (ALL WHEELS)

The front and rear wheels shall have stainless steel lug nut covers. The front axles shall be covered with stainless steel baby moons with hole to view oil seal window. The rear axles shall be covered with foam mounted stainless steel high hats.

The lug nut covers, baby moons and high hats shall be American made Real Wheels brand mirror finish, 304L grade, non-corrosive stainless steel meeting D.O.T. certification standards. All stainless steel baby moons and high hats shall carry a lifetime warranty.

FRONT WHEEL SERVICE BRAKE LOCK-UP SYSTEM

A front wheel service brake lock-up system shall be installed which will apply both the front air and rear spring brakes upon application of the PP-1 push-pull valve in the cab.

AIR DRYER

A Meritor Wabco system saver 1200 spin-on desiccant air dryer with a 12-volt, 100-watt automatic heated moisture ejector shall be installed in the air brake system.

The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure.

The Meritor Wabco air dryer shall come with a three (3) year or 300,000 mile warranty provided by Meritor Wabco Vehicle Control Systems.

MANUAL DRAINS ON AIR TANKS

Manual drains shall be installed on all reservoirs of the air brake system.

CABLE DRAIN VALVES ON AIR TANKS

The manual drain valves shall have pull cables attached. The actuation pull cable shall be extended out to the frame rail to allow the drains to be activated from the side of the chassis.

NYLON AIR LINE TUBING

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

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

AIR TANK MOUNTING

The air tanks shall be installed one (1) inch inboard of the frame rails.

ENGINE

A Caterpillar C9 400HP turbocharged, air charged cooled engine shall be provided.

TYPE:
In-Line six (6) cylinder, 4 cycle

HORSEPOWER:
400 @ 2100 rpm (Governed @ 2100 rpm)

TORQUE:
1100 lbs.ft. @ 1400 rpm

DISPLACEMENT:
537 cu.in.

GOVERNOR:
Electronic

A wiring harness shall be provided with a drop out at the back of the cab. The harness shall include a connector to allow an optional harness for the pump panel to be plugged into it. Circuits shall be provided for multiplexed gauges, tachometer, oil pressure, engine temperature, hand throttle, high idle and PSG system. A circuit for J1939 data link shall also be provided at the drop out.

An engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge shall be part of the engine's lubrication system.

An external mounted transmission cooler shall be part of the engine cooling system.

A spin on engine coolant filter with shut-off valve shall be provided.

AIR COMPRESSOR

The air compressor on the engine shall be a Bendix BA-921 rated as being capable of producing a minimum of 15.8 cfm. It shall be gear driven, engine oil pressure lubricated and cooled by the engine cooling system.

ENGINE WARRANTY

The Caterpillar engine shall be warranted for a period of five (5) years or 200,000 miles, whichever occurs first.

FUEL WATER SEPARATOR WITH LIGHT AND ALARM

A Caterpillar combination primary filter/fuel water separator shall be installed with an instrument panel lamp and audible alarm to indicate when water is present in the fuel. The secondary filter shall also be provided and mounted on the engine in a convenient serviceable location.

PAC BRAKE ENGINE EXHAUST BRAKE

An engine exhaust brake shall be installed in the engine exhaust system to serve as a speed retardation device. There shall be an on-off switch located on the instrument panel. The driver releasing the accelerator will activate the brake when the switch is in the "On" position.

The exhaust brake shall activate an aggressive downshifting of the transmission to enhance the exhaust brake's performance.

EXHAUST SYSTEM

The exhaust system shall be installed under the frame with the discharge to the left side forward of the rear tires.

A muffler and .065 wall aluminized steel exhaust tubing supported by bolted on frame brackets shall be installed.

Stainless steel flex tubing is to be installed between exhaust pipe and muffler. System joints shall be connected with lapping band clamps.

COOLING SYSTEM

The cooling system shall have sufficient capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the engine and transmission manufacturer and EPA requirements. The complete cooling system shall be mounted in a manner to isolate the system from vibration and stress. The individual cores shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining core(s).

Radiator

The radiator shall be a cross-flow design constructed completely of aluminum with welded side tanks. The radiator shall have a minimum of a 571 sq. in. core and be bolted to the bottom of the charge air cooler to allow a single depth core, thus allowing a more efficient and serviceable cooling system. The radiator shall also be equipped with a drain cock to drain the coolant for serviceability.

Surge Tank

The cooling system shall be equipped with a surge tank that is capable of being filled and removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a cap that meets the engine manufactures pressure requirements as well as the system design requirements.

Coolant

The cooling package shall have Extended Life Coolant (ELC) installed. The use of supplemental coolant additives (SCA) will not be allowed, as this is part of the extended life coolant makeup. The use of ELC provides longer life and change intervals providing improved performance. The coolant shall contain ethylene glycol and deionized water to keep the coolant from freezing to a temperature of -34 degrees F.

Hoses/Clamps - Radiator

All radiator tubes shall be formed from aluminized steel tubing and installed with silicone hoses with stainless steel constant torque clamps.

Recirculation Shields

Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting the performance.

Charge Air Cooler

The charge air cooler shall be a cross-flow design constructed completely of aluminum with welded side tanks. The charge air cooler shall have a minimum of a 401 sq. in. core and be bolted to the top of the radiator to allow a single depth core, thus allowing a more efficient and serviceable cooling system.

Hoses/Clamps - Charge Air Cooler

All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "T" style clamps meeting the engine manufactures requirements.

COOLING SYSTEM FAN

The engine cooling system shall incorporate a heavy-duty composite fan, belt driven on the engine. A shroud and recirculation shield system shall be used to ensure air that has passed through the radiator is not drawn through it again.

COOLANT FILTER

An engine coolant filter with a shut-off valve shall be installed on the engine. The location of the filter shall allow for easy maintenance.

TRANSMISSION

The transmission shall be an Allison 3000 EVS automatic with electronic controls. The transmission shall have two (2) 10-bolt PTO pads.

The transmission shall be equipped with an air to oil transmission cooler located below the radiator allowing a single depth core and efficient cooling package. The transmission cooler shall be mounted in a manner to allow maximum approach angle by not protruding below the frame more than an inch. The transmission cooler shall be constructed completely of aluminum with welded side tanks. The transmission shall have two (2) internal oil filters.

Fourth gear hold-in range may be accomplished by wiring for a pumping application.

The transmission gear ratios shall be:

1st	3.49:1
2nd	1.86:1
3rd	1.41:1
4th	1.00:1
5th	0.75:1
6th	0.64:1 (if applicable)
Rev	5.03:1

Transmission to be provided with I/O pack 119 for rescue interlock.

TRANSMISSION COOLING SYSTEM

Transmission Cooler

The transmission cooler shall be a cross flow air to oil design constructed completely of aluminum with welded side tanks. The transmission cooler shall have a minimum of a 136 square inch core and shall be bolted to the bottom of the radiator to allow a single depth core, allowing a more efficient and serviceable cooling system. The transmission cooler shall be mounted in such a manner as not to extend below the chassis frame by more than 1", allowing greater approach angles and ground clearance.

Transmission Heat Exchanger Non-Retarder Application

The transmission oil to water heat exchanger shall be installed to aid in cold climate conditions maintaining the transmission temperature at the operational level.

SYNTHETIC TRANSMISSION FLUID

Castrol "Transynd" or an equivalent synthetic TES 295 transmission fluid shall be utilized to fill the EVS transmission.

TRANSMISSION MODE

The transmission, upon start-up, will select four (4) speed operation. By pressing the "mode" switch on the shift pad (mode on) provides five (5) speed overdrive.

TRANSMISSION WARRANTY

The Allison 3000 EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

ALLISON 3000 EVS TRANSMISSION SERVICE MANUALS

The following Allison 3000 EVS transmission service and reference manuals shall be provided:
PC2809EN Parts Catalog
SM2148EN Service Manual
GN2055EN Technician Guide
TS2973EN Electronic Controls Troubleshooting Manual

ALTERNATOR

A 270 amp 12 volt Leece Neville alternator model #4949PA with integral regulator and #10 screw AC terminals shall be installed.

The package shall include a CAT C-9 Service Manual, and a CAT C-9 Trobleshooting Guide, and any other applicable manuals.

ENGINE OIL LEVEL CHECK

A low engine oil level switch shall be provided that will indicate when the engine oil is approximately four (4) quarts or more low. The switch shall light a red "LOW OIL LEVEL" indicator light in the dash. The indicator shall only function while the ignition switch is on and the engine is not running.

FUEL SHUT-OFF VALVE AT FUEL TANK

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

TAIL PIPE CHROME EXTENSION

A radiused chrome exhaust tail pipe extension, to direct exhaust gases downward, which terminates on the right hand side of the chassis, forward of the rear tires, shall be installed with a galvaneal band clamp.

AIR CLEANER

The air cleaner shall be Farr #62891-001 dry type with a replaceable element, it shall have an outside air intake with an ember separator filter and an indicator light in the warning light cluster to show when the air cleaner element requires replacement.

STOP, TAIL, TURN AND BACK-UP LIGHT WIRING

Individual wires shall be run to the rear of the chassis for the stop light, turn signal, tail light and back-up lights.

TRANSMISSION TOUCH PAD

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and reach.

DRIVELINES

All drivelines shall be Spicer 1710 heavy duty series with "glide coat" splines on all slip shafts.

MULTIPLEX ELECTRICAL SYSTEM WITH COLOR DISPLAY

A Weldon multiplex electrical system shall be supplied. The system shall be a single starting type, installed per NFPA 1901. The electrical system shall be 12 volt, suppressed per SAE J551 with six (6) Douglas BCI-31 950 CCA batteries with 210 minute reserve capacity and 3/0 welding type dual path starter cables per SAE J541.

The Multiplexed wiring system shall include the following:
* Dash or engine tunnel mounted information center with approximately 4"H (92mm) x approximately 6"W (159mm) color LCD screen.
* Systems Diagnostic Menu and controls.
* Solid state switching.
* Complete Peer to Peer network architecture.
* Weatherproof Nodes and sealed Deutsch connectors.
* Sequences and sheds electrical loads.

The Vista III Display Node shall include the following features:
* Automatic climate control when an air conditioning system is ordered.
* Outside temperature display.
* A real time clock with display.
* Three (3) programmable video inputs.
* A useable temperature range from -40 degrees to 185 degrees F.
* Unlimited virtual switches.
* Selectable font sizes, types and colors for optimum user efficiency.
* Selectable color buttons and screen backgrounds.

All wiring to be appropriate gauge cross link with 311 degree F. insulation. All wires in the chassis shall be circuit numbered and function coded, in addition the SAE wiring will be color coded. The wiring shall be protected by 275 degree F. minimum high temperature flame retardant loom as required.

The starting system shall be supplied with the following:
One (1) Cole-Hersee #2484 master battery switch.
One (1) Cole-Hersee #EX26654A ignition switch.
One (1) starter button.
One (1) green LED indicator for battery "on".
One (1) green LED indicator for ignition "on"

Includes 4 rocker switches on driver's dash:
1. Secondary Braking On/Off switch.
2. Secondary Braking Variance Control (High/Low) or (High/Med/Low).
3. Spare (if not replaced by customer requested options).
4. Spare (if not replaced by customer requested options).

Features included with the Multiplex system include:

Back-up Alarm Disable Switch
A back-up alarm disable switch shall be installed in the cab dash within reach of the driver. The switch will allow the driver to turn the back-up alarm off. The back-up alarm shall automatically reset to sound the next time the transmission is placed in reverse.

Incandescent Ground Lighting Below Each Door
The cab shall be equipped with Trucklite model #40003 sealed bulb, incandescent lighting under each cab door. The lights will be activated by either a single switch on the dash or each respective door switch.

Alternating Headlights
An alternating high beam headlamp flashing system shall be installed into the high beam headlamp system that will allow the high beams to flash alternately from left to right.

The completed system shall be capable of using high beam to override flashing function and will flash high beams only when the low beam headlamps are selected.

Audible Alarm for Open Door Light
An audible alarm shall be wired to the open door light, which will sound when a door is open and the air brake is off with the vehicle in gear.

ROCKER SWITCH CONSOLE

A three (3) section, double row switch console shall be provided and shall be an integral part of the engine tunnel, with easy switch access to both the driver and officer. The console will consist of an angled driver's side panel, center main panel and angled officer's side panel.

The switch console shall not be an add on type console.

OFFICER ROCKER SWITCH PANEL

The officer's side switch panel shall be equipped with a color Mux Vista display.

DRIVER ROCKER SWITCH PANEL

The color Mux Vista display will be mounted in the right hand side of the panel. The driver's side panel shall include a rocker type headlight switch with instrument lamp slide dimmer, intermittent windshield wiper/washer switch and secondary braking device rocker switches.

CENTER ROCKER SWITCH PANEL

The center main rocker switch panel shall include six (6) LED backlit and labeled rocker switches mounted in the left hand side of the panel. The single row of switches shall be located across the top left of the panel. The right hand section of the panel shall be left free to accommodate flush mounted equipment.

BATTERY JUMPER STUDS

Battery jumper studs shall be provided in the driver's step area. The studs allow the vehicle to be jump started or cab to be raised in an emergency due to battery failure.

INSTRUMENTATION

An ergonomically designed instrument panel shall be provided. The gauges shall be backlit with red LED lamps. All gauges shall be driven by stepper motor movements. The instrumentation system shall be multiplexed and shall receive engine and transmission information over the J1587 data bus to reduce the number of redundant sensors.

The instrument panel shall contain the following gauges:

One (1) electronic tachometer with integral digital hour meter. The scale on the tachometer shall read from 0 to 3000 RPM. The hourmeter shall display engine hours of operation.

One (1) electronic speedometer with integral digital odometer/tripodometer. The speedometer shall have a dual scale with miles per hour (MPH) as the dominant scale and kilometers per hour (KPH) on the minor scale. The speedometer scale shall read from 5 to 85 MPH (5 to 140 KPH). The odometer shall display miles.

One (1) three function gauge with primary air pressure, secondary air pressure and fuel level. The scale on the air pressure gauges shall read from 0 to 140 pounds per square inch (PSI). The air pressure scales shall be non-linear to expand the scales in the region of normal operation. The scale on the fuel level gauge shall read from empty to full.

One (1) four function gauge with engine oil pressure, coolant temperature, transmission oil temperature and a voltmeter. The scale on the engine oil pressure gauge shall read from 0 to 140 pounds per square inch (PSI). The engine oil pressure scale shall be non-linear to expand the scale in the region of normal operation. The scale on the coolant temperature gauge shall read from 100 to 250 degrees Fahrenheit (F). The scale on the transmission oil temperature gauge shall read from 100 to 300 degrees Fahrenheit (F). The scale on the voltmeter shall read from 8 to 16 volts.

The instrument panel shall contain an Annunciator Module that contains the following indicator lights. All indicator lights shall contain LED lamps.

RED LAMPS
Stop Engine - indicates critical engine fault.
Park Brake - indicates park brake is set.
Low Fuel - indicates low fuel.
Cab Ajar - indicates tilt cab is not locked down. (1)
Volts - indicates high or low system voltage.
Low Oil Press - indicates low engine oil pressure.
High Coolant Temp - indicates excessive engine coolant temperature.
High Trans Temp - indicates excessive transmission oil temperature.
Low Air - indicates low air pressure in either system one or system two.
Low Coolant Level - indicates low engine coolant level. (1)
Low Oil Level - indicates low engine oil level. (1)
Air Filter - indicates excessive engine air intake restriction.

YELLOW LAMPS
Check Engine - indicates non-critical engine fault.
Check Trans - indicates transmission fault.
Wait to Start - indicates active engine air preheat cycle. (2)
ABS - indicates anti-lock brake system fault.
Water in Fuel - indicates presence of water in fuel filter. (1)
Engine Maint - indicates engine maintenance is required. (1)

GREEN LAMPS
Left and Right turn signal indicators.
Aux Brake Active - indicates secondary braking device is active. (1)
High Idle - indicates engine high idle is active. (1)
Low Trac - indicates low wheel traction for automatic traction control (ATC) equipped vehicles, also indicates mud/snow mode is active for ATC system. (1)

BLUE LAMP
High beam indicator.

The instrumentation system shall provide a constant audible alarm for the following situations:
Low air pressure.
Low engine oil pressure.
High engine coolant temperature.
High transmission oil temperature.
Low coolant level. (1)
High or low system voltage
Critical engine fault (Stop Engine).

The instrumentation system will provide a three second alarm every three minutes for the following situations:
Low fuel.
Water in fuel. (1)

(1) Feature only available when optionally equipped.
(2) Feature only available on engines with preheat capability.

WHELEN ELECTRONIC SIREN

A Whelen WS-295HFS2 electronic siren head shall be provided and installed in the center main switch lower panel.

Location left side of center panel.

POWER AND GROUND STUDS - BATTERY DIRECT

Power and grounding studs shall be provided and installed behind the electrical center cover with a breaker. The studs shall be #10 and capable of carrying up to a 40 amp battery direct load.

SUPER AUTO EJECT 20 AMP KUSSMAUL

A Kussmaul 20 amp Super auto-eject electrical receptacle with a yellow weatherproof cover and box shall be installed on the left side of the cab above the wheel well. It shall automatically eject the plug when the starter button is depressed.

The U.L. maximum allowable amperage draw on receptacles is generally 80% of their listed rating, for example, the 20 amp receptacle should not carry more than 16 amp continuous load. When adding the different amperage draws of the components being installed on the chassis be sure to factor in whether the components will draw a continuous load or intermittent load.

Amp Draw Reference List:
Kussmaul 1000 Charger - 3.5 Amps
Kussmaul 1200 Charger - 10 Amps
Kussmaul 35/10 Charger - 10 Amps
1000W Engine Heater - 8.33 Amps
1500W Engine Heater - 12.5 Amps
120V Air Compressor - 4.2 Amps

MARKER LAMPS

Five (5) I.C.C. DOT approved Weldon model #9186-1500-20 Light Emitting Diode (LED) cab marker lamps shall be installed on the face of the cab above the windshield.

INTERSECTOR LIGHTS

Two (2) Whelen 4x6 Super LED blue wide angle warning lights shall be installed on each cab radius or the bumper tail to act as intersector lights.

Blue LEDS

SCENE LIGHTS

Two (2) Whelen #900 series clear halogen scene lights shall be installed on the sides of the cab. The lights shall be surface mounted one (1) each side of the cab. The lights shall be controlled by separate switches one (1) for the left side and one (1) for the right side.

THREE DOOR CAB - COMMAND CENTER

The left rear crew cab door shall be eliminated and the cab trimmed so it can be converted into a command cab by the apparatus builder.

DOOR WARNING - CHEVRON

Three (3) Chevron reflective signs shall be installed on the lowest portion of the inner door panels, one (1) on each door. A stripe of reflective tape shall be installed at the outer edge of each door.

FULL WIDTH CREW CAB DOOR ASSIST RAILS

Black powder coated cast aluminum assist rails shall be provided and installed on the inside of the rear crew doors the full width of the window glass. The rails shall assist personnel in exiting and entering the cab. The rails shall be located at the retracted door window glass level and will protect the exposed window glass area.

INTERIOR LIGHTING

The cab interior lighting shall consist of the following:

A red/white dome lamp shall be located over each door. The white lamp shall be activated by its respective door when opened and both activated by an individual switch on the light.

A red/white dome lamp with individual switches shall be located in the headliner, over the engine tunnel to serve as a tunnel surface light.

FLASHING DOOR AJAR LIGHT

A red flashing door ajar light shall be located in the headliner, centered in the cab. The light shall be 6.00" long x 2.50" wide x 1.75" high and labeled "Do Not Move Apparatus". The light shall be wired to indicate an open door on the cab when the parking brake is released.

ENGINE TUNNEL LIGHT

A Trucklite 4" diameter clear work light shall be provided and installed under the engine tunnel.

CLEAR DOME LAMP(S) - Two (2)

Two (2) 7" clear dome lamp(s) with two (2) switch(s) shall be mounted in the headliner of the cab.

DOME LAMP ACTIVATION

Two (2) 7" dome lamp(s) shall be activated by any door in addition to two (2) push button switch(s).

MAP LIGHT

A Roxter gooseneck style instrument panel map light with switch at base shall be installed on the right hand side of the dash panel.

WEATHER BAND AM/FM RADIO WITH COMPACT DISC PLAYER

A heavy duty Panasonic Weather Band AM/FM stereo radio with compact disc player and four (4) speakers shall be installed in the cab. The radio shall be installed above the driver. Two (2) speakers shall be installed overhead front with the other two (2) speakers in the upper rear corners of the cab.

CAMERA DUAL REARVIEW WITH DISPLAY ON VISTA SCREEN

An ASA audiovox rearview camera shall be supplied for viewing through the color Vista display panel. One camera will be mounted in a location, as to afford the driver a clear view of the blind spot on the officer side of the vehicle. A second camera will be shipped to the OEM for installation in the body to afford the driver a clear view of the rear of the vehicle. A one way communication speaker is to be installed at the rear of the vehicle to allow the backup advisor to use voice commands to direct the driver.

DASH AND HEADER TRIM ABS

The cab interior dash trim shall consist of a two (2) piece vacuum formed ABS composite driver, officer panel and center assembly. The center dash shall incorporate the integral rocker switch console and incorporate a latching electrical component access cover to allow complete access to the underside of the switch panel assembly and electrical harness and components.

The "A" pillar and center windshield post trim shall consist of a vacuum formed ABS composite driver, officer and center cover.

The header trim shall consist of a vacuum formed ABS composite driver, officer and a two (2) piece center HVAC cover. Mounted to the trim panels shall be two (2) 5.75" x 22.50" vinyl sunvisors.

ABS INNER DOOR PANELS

The inner door panels shall be a vacuum formed ABS composite panel with robust styling grooves that provide structural integrity. A partial aluminum reinforcement structure shall be included. The door panels shall also include multiple recesses to accept optional features such as "Custom Built For" logos and metal "kickplates" inserts. A "Fireman Friendly" cast aluminum pull handle shall be included with the front door panel.

E

The fixed type engine cover shall be a maximum of 21.00" high x 36.00" wide. The cover shall be an integral part of the cab and made of 0.19" thick aluminum.

The interior cab side shall be covered with a multi-layer mat consisting of; .25" thick sound absorbing closed-cell foam, a heavy weight sound barrier, a .06" thick non-slip vinyl wear surface with a pebble grain finish, and held in place by a pressure sensitive adhesive and aluminum cornering trim. All exposed seams are sealed to reduce moisture contamination and debris build up.

The engine side of the cover shall be heavily insulated with multi-layer insulating materials, consisting of foam, a 1.0 lbs per sq ft sound barrier with a facing that resists heat transfer, and held in place by adhesive, aluminum stick pins and retention caps. All exposed insulation seams and edges are sealed to reduce moisture ontamination and debris build up.

MOBILE DATA TERMINAL PROVISION - ABS DASH

A Mobile Data Terminal (MDT) provision shall be provided above the glove box on the officer side of the dash. The MDT provision shall be recessed 3.00" below the surface of the dash and 9.50"D x 13.75"W. The glove box shall be 5.75"H x 12.75"W x 5.75"D with a hinged locking door. A 20 amp 12AWG clean power and ground circuit will be provided to the MDT area.

CENTER CONSOLE

A center console shall be provided between driver and offiver with cup holders, map pockets and 12v power ports.

PAINT INTERIOR

The interior metal surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.

INTERIOR TRIM COLOR AND FLOOR MAT GRAY/GRAY/BLACK

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

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

The cab interior floormat shall be black in color.

The interior cab floor, engine tunnel sides and front seat risers shall be covered with a mutlit-layer mat consisting of; .25" thick sound absorbing closed-cell foam, a heavy weight sound barrier, a .06" thick non-slip vinyl wear surface with a pebble grain finish, and held in place by a pressure sensitive adhesive and aluminum cornering trim. All exposed seams are sealed to reduce moisture contamination and debris build up.

HVAC SYSTEM

The cab shall be equipped with a ceiling mounted HVAC system. The system shall consist of an overhead heater/defroster/air-conditioning unit mounted above the engine tunnel in a central location with dash mounted controls.

The ceiling mounted HVAC system includes fourteen (14) adjustable louvers. Six (6) forward facing louvers for windshield, 45,000 Btu's of heat at 460 cfm for defrosting. Four (4) rearward facing louvers to direct air for crew comfort and six (6) for driver and officerc comfort. In "Cabin Mode" the system is designed to produce 60,000 Btu's of heat and 32,000 Btu's of cooling. The system shall be capable of lowering the cab interior temperature from 100 degrees to 70 degrees within thirty minutes, with a relative humidity of sixty percent.

A roof mounted condenser shall be installed in one (1) of the following locations: See attached PDF File for Clarification.

1.) Flat Roof (Pumper/Rescue/Mid-Mount Aerial): Centered on cab mid roof.
2.) Raised Roof (Pumper/Rescue/Mid-Mount Aerial): Centered on cab forward of raised roof against the slope rise.
3.) Flat Roof (Traditional Aerial): LH side of cab mid roof.
4.) Raised Roof (Traditional Aerial): LH side of cab mid roof on raised section.

The air-conditioning compressor will be an engine driven Seltec TM-16 and utilize R-134A refrigerant.

The A/C lines will be a mixture of custom bent zinc coated steel fittings and Aeroquip flexible hose with E-Z clip fittings.

All heater system hoses, including auxiliary units shall be silicone with stainless steel constant torque clamps approved for use with silicone hose.

DELUXE INSULATION PACKAGE

Additional insulation in the cab shall be installed to improve air-conditioning and/or heating in extreme weather climates as well as reducing road noise. The sides, roof and rear wall of the cab shall contain 1" thick multilayered insulation.

CAB TILT ACTUATION

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

The cab tilt actuation shall be with an electric over hydraulic lift pump with a control box on a pendant for safe visual operation.

The lift system shall have an ignition interlock and red lock down indicator lamp, which shall illuminate when holding "down" switch to indicate safe road operation. It shall be necessary to activate the master battery switch with the park brake set in order to tilt the cab.

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

Two spring loaded hydraulic hold down hooks outboard of the frame shall be installed for holding the cab securely to the frame.

A steel safety assembly shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety assembly shall fall over the lift cylinder when the cab is in the "up" position. A cable release system shall also be provided to clear the safety assembly from the lift cylinder when lowering the cab.

RECEPTACLE FOR CAB TILT CONTROL

A receptacle shall be installed in the right hand side of the front bumper tail to provide a place to plug in the cab tilt remote control pendant.

CUT OUT IN REAR CAB WALL

The rear wall of the 20" raised roof cab shall be cut out 24"W x 72"H for walk through application.

WHEEL WELL LINERS

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. The two-piece liners shall consist of an inner liner 16" wide made of vacuum formed ABS composite and a outer fenderette 3.50" wide made of 14 gauge 304 polished stainless steel.

EXTERIOR CAB ASSIST HANDLES

Three (3) 18" knurled anti-slip one-piece exterior assist handles shall be installed, one (1) behind each cab door. The assist handle shall be made of 14 gauge 304 stainless steel and be 1.25" diameter to enable easy grabbing with the gloved hand.

EXTERIOR PAINT

All cab painting must be completed prior to the installation of glass accessories or any other cab trim to assure complete paint coverage and maximum corrosion protection.

The entire cab must be disc ground to remove any surface oxidation or surface debris that may hinder the paint adhesion. After the surface is machine finished a high quality acid etching base primer shall be applied. Upon the application of required body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The entire cab then shall be coated with an intermediate solids or epoxy surfacer that is designed to fill minor surface defects, provide an adhesive bond between the primer and the paint, and improve the color and gloss retention of the color coats.

The cab shall be finish sanded with 360 grit paper, seams sealed with SEM seal sealer and painted with two (2) to four (4) coats of an acrylic urethane type system designed not only for color retention, but to resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene.

The maximum overall film thickness of the top coat shall not exceed five (5) mils.

The standard PPG (FBCH) paint shall be warranted for ten (10) years against cracking, checking or peeling and loss of gloss caused by chalking or fading, other paint warranties will vary by manufacturer (for example, Sikkens FLNA or Dupont Imron 6000).

Cab underside and doors shall be rustproofed with a ten (10) year or 100,000 mile warranty certificate against perforation issued in the Fire Department's name.

Cab to be painted White #_____.

Paint brand and color:

HAND SAND AND BUFF FINISH

The base coat clear coat finish shall be power sanded and machine finished to achieve a flat finish on all "A" visual surfaces.

OPERATORS MANUAL AND PARTS LIST

A chassis operator's manual and parts list with wiring and air plumbing diagrams shall be provided. The wiring and plumbing diagrams shall be of the chassis model.

ENGINE AND TRANSMISSION OPERATION MANUAL

One (1) engine operation and maintenance manual and one (1) transmission operation manual shall be included in the Spartan operator's manual.

FIRE EXTINGUISHER

A 2.5 pound BC D.O.T approved fire extinguisher shall be shipped loose with the cab.

ROAD SAFETY KIT

A road safety kit shall be provided and shall consist of three (3) DOT approved reflective triangles.

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 the cab/chassis manufacturer. No other alternation or modifications are required.

BUMPER GRAVELSHIELD

The bumper extension gravelshield shall be provided by the cab/chassis manufacturer.

AIR HORN(S)

The air horn(s) shall be supplied and installed by the cab/chassis manufacturer.

EXHAUST

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

ADDITIONAL BATTERIES

Six (6) Optima "Yellow Top" group 31 battery(s) shall be provided and mounted on slide-out tray located in Compartment S2. These additional batteries shall be completely separate from the cab/chassis battery system, and charged by the specified Kussmaul 75 amp DC power supply wired to the on-board generator system.

CELLULAR PHONE ANTENNA INSTALLATION

There shall be two (2) supplied Nextel cellular phone antennas installed on the unit. The antenna location and termination location for each cellular phone shall be determined by the Maui Police Department.

RADIO/ANTENNA INSTALLATION

There shall be twenty six (26) radio(s) with antenna(s) installed in the completed unit. Each radio shall be wired for with 12 VDC power and ground as required by radio manufacturer. The antenna location and termination location for each radio shall be determined by the Maui Police Department.

See the detailed radio list in the communications portion of the specification.

MUDFLAPS

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

AUTOMATIC VEHICLE LEVELING SYSTEM

A Quadra Manufacturing, Inc. "Big Foot" model QE-2 shall be installed on the unit designed for large heavy duty vehicles with a GVWR over 23,000 pounds. The system shall have four (4) mounting brackets welded to the chassis frame rails, two (2) front and two (2) rear. Each jack shall bolt to the bracket attached to the chassis frame.

Each jack has its own hydraulic reservoir and 12 volt DC motor wired to the chassis electrical system. Jack pads have a 100 square inches surface to prevent sinking in soft ground. Jacks shall be rated for lifting 17,000 pounds minimum (each).

The system shall have a drive-off safety feature. If the vehicle ignition switch is on and any legs are not fully retracted, a warning alarm will sound with the Deluxe-Touch Pad, fully automatic panel with sensor.

The system shall be provided with a 5 year limited warranty from Quadra Manufacturing, Inc.

Leveling system shall be provided with a transmission interlock preventing transmission to be placed in gear until legs are retracted.

CAB WINDOW TINT

All cab windows (except front windshields, driver's and officer's door windows) and body windows shall be provided with a 5% dark tint.

CAB COMMAND CENTER

There shall be one (1) counter cabinet with hinged doors provided in the cab interior. The cabinet shall be constructed of 1/8" smooth finish aluminum and finished with a dark gray hammer tone powder coat for a hard and durable surface. The cabinet shall be approximately 28" wide x 16" deep x 38" high, and consume the area from the door to rear wall.

- There shall be one (1) vertically adjustable shelf/shelves in each of the above cabinets. It shall have a 1.25" lip to contain items while minimizing space used.

- There shall be one (1) perminate shelf/shelves located rear curbside wall for Maui Police Department supplied fax machine. It shall have a 1.25" lip to contain items while minimizing space used.

MAGNETIC WHITEBOARD

There shall be one (1) magnetic whiteboard surface(s), as large as possible located in the cab command area on streetside wall above desk.

DATA RACK

A Middle Atlantic Products model # MRK-2426, with 24 rackspaces, shall be provided on curbside of “L” Desk behind passenger seat. Overall dimensions of rack shall be 48.12” H x 22” W x 26.4” D. Useable height shall be 42.2” rackspaces, useable depth shall be 24”. Rack shall be fully welded construction and provide a 2,500 lb. weight capacity.

Rack shall be constructed of steel and finished in a durable black powder coat paint. The MRK shall have a solid locking rear door and have a removable rear electrical knockout panel installed in base, and removable rear electrical knockouts with "N" type connectors for UHF/VHF antennas installed in top if necessary. A 1/4-20 threaded grounding and bonding stud shall be installed in base of enclosure.

Rack shall be warranted to be free from defects in material or workmanship under normal use and conditions for the lifetime of the product.

In addition the MRK shall be provided with model #FD-24 reinforced 16-gauge solid steel front door, Removable key locked 16-gauge steel side panels with recessed lift handles model # SPN-267-24, Integrated fan tops with proportional speed thermostatic fan control, Vertical outlet strip model #PD-2415SC-NS, and three (3) U type shelves. A minimum 37 amp UPS (uninterruptable power supplies) with surge protection shall be located in data rack.

TELEX DISPATCH SYSTEM

Two (2) customer provided Telex dispatch systems shall be installed in rear chassis cab area.

INTERIOR CABINET - OVERHEAD

There shall be two (2) overhead cabinets provided, above streetside of "L" desk in rear area of cab. Cabinets shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray.

- The above cabinet(s) shall have sliding aluminum doors.

REAR CAB "L" SHAPED DESK

The rear portion of cab shall be provided with an "L" shaped desk extending from the curbside data rack to streetside directly behind the driver and officer and extending to the rear wall of the cab on the streetside. The desk shall be 18" deep and located approximately 30" from the floor. The front edge of desk top shall be reinforced with 2" x 2" tubing in order to support a person sitting on the edge of the desk.

The desk top surface shall be fabricated of 3/16" smooth aluminum with a 2" vertical back splash along the back edge and a 2" vertical downward edge along the front to cover the 2" x 2" reinforcement. There shall be 2-1/2" diameter holes with plastic edge grommets provided at each rear corner for wiring of future equipment located on the desk top.

- Two (2) 120 volt electrical outlet(s) shall be provided at the two (2) seated positions at the desk.

INTERIOR PEDESTAL SEAT

Two (2) Bostrom Sierra high back vinyl pedestal type seat(s) with 6" fore/aft adjustment shall be provided on the completed apparatus. Each seat shall be mounted on a swivel style pedestal base and securely bolted to the reinforced floor structure. The seat shall closely match the driver and officer seat colors.

Black

The above specified seat(s) shall be provided with an automotive type lap seat belt. The seat belt(s) shall be secured to the attachment point provided on the seat and shall be red.

FUEL FILL

There shall be one (1) Cast Products fuel fill door located in the streetside exterior wheel well panel, behind the rear axle. The fill door shall have a latching, hinged door and a permanent label with the text "DIESEL FUEL ONLY".

DRI-ERASE MARKER/MAGNATIC BOARD

Two (2) Dri-Erase / Magnetic Board(s) shall be provided. Boards shall be custom fabricated from smooth steel sheet metal and painted Bright White. Board shall be approximately and located one (1) each side of walk-thru on rear wall of cab..

SLIDE-OUT PENCIL DRAWERS

There will be one (1) slide-out pencil drawer provided under the desk top.

REMOTE KEYLESS ENTRY SYSTEM

The Spartan custom cab manual door locks shall be equipped with a POP Locks electric actuated door locking system. All cab doors shall be locked and un-locked from a numeric key pad located adjacent to the drivers door.

All doors shall have a manual key operated override capability in the event of a failure of the electric lock system. All cab doors shall be keyed alike.

Four (4) hand held remote controls shall be provided for controlling the cab.

Note: Alert notification function with security system shall be investigated and if avalible provided prior to assembly. Maui Police Department shall provide information on "Digital Security" local company.

INTERCOM SYSTEM

A customer supplied Sigtronics 4-position intercom shall be installed.

Equipment to be provided by customer.
Harmer Communication.

BODY DESIGN

The importance of public safety associated with emergency 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 the requirements for a custom built emergency type vehicle. In order to extend the expected service life of this vehicle, the body module shall be removable from the chassis frame and be capable of being installed on a new chassis.

The sheet metal material requirements, including alloy and material thickness, throughout the specifications are considered to be a 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 Maui Police 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 Maui Police Department from such repair and shall NOT be used.

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

The sheet metal fabrication of the body shall be performed using inert gas continuous feed welders only. The entire body shall be welded construction. The use of pop rivets in any portion of structural construction may allow premature failure of the body structure. Therefore, pop rivets shall NOT be used in the construction of the structural portions 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 3/16" (.187) 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 be not less than 3/16" aluminum 3003H-14 alloy smooth plate, fully and continuously welded in place. 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 subframe 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 subframe shall be constructed from 6061T6 aluminum alloy tubing. Subframe shall consist of two (2) 2" x 6" x 1/4" aluminum tubes, the same width as the chassis frame rails, NO EXCEPTION. Welded to this tubing shall be crossmembers of 2" x 6" x 1/4" aluminum. These crossmembers shall extend the full width of the body to support the compartments. Crossmembers 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 crossmembers shall be located as necessary to support walkway 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

The body subframe shall be fastened to the chassis frame with a minimum of eight (8) spring loaded body mounts. Each mount shall be configured using a two-piece encapsulated slide bracket. The two (2) brackets shall be fabricated of heavy duty 1/4" thick steel and shall have a powder coat finish to prevent any corrosion. Each mounting assembly shall utilizing two (2) 5/8" diameter x 6" long grade L9 bolts and two (2) heavy duty springs. The assembly design shall allow the body and subframe to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall eliminate any stress from being transferred into the body. The spring loaded body mounts shall also prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.

Body mountings that do not allow relief from chassis movement will not be acceptable.

17" REAR STEP BUMPER

The full width rear bumper shall be constructed from 2" x 2" x 1/4" aluminum tubing frame and covered with 3/16" aluminum tread plate. Any stepping surface shall have a grip surface material to meet NFPA requirements. The bumper shall extend from the rear vertical body panel 17" and provide a rear step with a 1" space at body for water drainage.

REAR TOW EYES

There shall be two (2) heavy duty rear mounted tow eyes securely attached to the body subframe, below the apparatus body. The tow eyes shall be fabricated from steel plate and shall have a black powder coat finish.

WHEEL WELL EXTERIOR PANEL

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

DIEFORMED BEADED EDGE BODY FENDERS

A die formed beaded edge shall be provided along the 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.

- Color: White
- Paint Number:_____

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 the 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 the 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

A 6" 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.

- This reflective stripe shall be white.

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

REFLECTIVE STRIPE - CAB

A 6" 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:

LETTERING/GRAPHICS

$5,000.00 is included in total bid amount to provided a lettering/graphics package acceptable to Maui Police Department. SVI will notify Maui Police Department after design of their lettering/graphics if this amount is more or less than total budget amount.

COMPARTMENT INTERIOR FINISH

The interior of compartments shall be painted with an epoxy primer then painted with a textured Zolotone paint finish. Paint color shall be grey.

EXTERIOR COMPARTMENT DOORS

HINGED DOOR CONSTRUCTION

The exterior compartment doors shall be custom manufactured and built for each compartment. These doors must be able to withstand years of rugged service and wear. For this reason, the compartment door design, metal thickness, and attachments must be strictly adhered to.

Door openings exceeding 32" in width shall be double door openings with the handle door at front. The handle door shall be first opening with a 3/4" overlap of the second door. The second door shall have a 3/4" interior overlap, and be held closed by the first opening door. The doors shall be flush mounted so that the outer surface is in line with the side body surface. Lap or bevel type constructed doors, doors framed with extrusions, or doors requiring rubber bumpers to prevent unnecessary contact are NOT ACCEPTABLE.

The compartment doors shall be all aluminum 3003H-14 alloy construction. The exterior panel shall be of 1/8" thickness smooth plate aluminum and the interior panel shall be of 3/16" thickness smooth plate aluminum. Lighter gauge material will NOT BE ACCEPTABLE in these areas. The double panel doors shall be 1-3/4" thick to completely enclose the door latching assembly. Doors shall have drain hole openings for drainage and ventilation.

Compartment door openings shall be sealed with closed cell automotive type rubber molding to provide a weather resistant seal around door. In addition rubber molding shall be provided along hinge to prevent moisture entry. Open cell foam type rubber moldings are NOT ACCEPTABLE.

Compartment doors shall have full height 14 gauge stainless steel hinge, with 1/4" stainless steel pin. The hinges shall be bolted to the door and body with stainless steel machine screws. A polyester barrier film gasket shall be placed between stainless steel hinge and any dissimilar metals as necessary.

Drip rails shall be installed above all compartment door openings. Drip rails shall be fastened with stainless steel screws. These drip rails shall be completely removable for easy replacement if necessary.

The latching of compartment doors shall be with stainless steel 6" Hansen offset bent D-ring keyed handles. A gasket shall be placed between stainless steel handle and door. Door latches shall be a double catching two-point (top and bottom) rotary slam latch, recessed inside the double panel door with striker plate.

All vertically hinged compartment doors shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door. Door checks that require unlatching by hand will NOT BE ACCEPTABLE.

BODY HEIGHT MEASUREMENTS

The vertical body dimensions shall be as follows:

AHEAD OF REAR AXLE

	Description	Dimension
A	Bottom of Subframe to Top of Body	89.0"
B	Bottom of Subframe to Bottom of Body	25.0"
C	Vertical Door Opening - (Short Compartment) -with hinged door	20.0"

BEHIND REAR AXLE

	Description	Dimension
D	Bottom of Subframe to Bottom of Body	22.5"
E	Vertical Door Opening - (Short Compartment) -with hinged door	17.5"

GENERAL

	Description	Dimension
G	Bottom of Drip Rail to Top of Body	38.5"
H	Walk-in Interior Height	78.0" (min)

(dimensions are generic and subject to change during the actual design process)

BODY WIDTH DIMENSIONS

The body shall be 100.0" wide, not including drip rail or non-permanent fixtures. Interior compartment depth dimensions shall be:

Area Description	Dimension
Transverse Area: - Above Top of Subframe	95.5"
Compartment Depth: - Below Top of Subframe - Ahead of Rear Axle	24.5"
Compartment Depth: - Below Top of Subframe - Behind the Rear Axle	23.5" (Eng. Note)

(dimensions are generic and subject to change during the actual design process)

STREETSIDE COMPARTMENT - FRONT (S1)

The interior useable compartment width shall be approximately 64.0" wide.

The approximate compartment door opening shall be 57.0" wide.

This compartment shall have a horizontally hinged box pan style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 3/16" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

This compartment shall have the following items:

- There shall be one (1) OnScene Solutions 18" LED light stick installed in this compartment. Each light shall be mounted horizontally, inside the compartment door. There shall be 30 LEDs per 18” light. The light stick shall be rated at 100,000 hours of service. Each light stick shall be provided with a 5 year free replacement warranty.

STREETSIDE COMPARTMENT - INTERMEDIATE (S2)

The interior useable compartment width shall be approximately 64.0" wide.

The approximate compartment door opening shall be 57.0" wide.

This compartment shall have a horizontally hinged box pan style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 3/16" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

This compartment shall have the following items:

- The 100amp 240 volt electrical shore line connection.
- Specified 12/120 volt inverter.
- The additional batteries specified shall be located in this compartment on 400 lb. rated slide-out tray. The specified Fleet Power 2500-12 inverter/charger shall be located near the battery location.
- A hinged hatch shall be provided in compartment floor for access to 100amp shore line connection.
- There shall be one (1) OnScene Solutions 18" LED light stick installed in this compartment. Each light shall be mounted horizontally, inside the compartment door. There shall be 30 LEDs per 18” light. The light stick shall be rated at 100,000 hours of service. Each light stick shall be provided with a 5 year free replacement warranty.

STREETSIDE COMPARTMENT - REAR (S3)

The interior useable compartment space shall be approximately 70.0" wide.

The approximate compartment door opening shall be 63.0" wide.

This compartment shall have vertically hinged box pan style doors fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 3/16" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

The hinged door(s) shall have a pneumatic cylinder to hold door in the open and closed positions. Each door shall be capable of being closed without unlatching. Door checks shall be bolted to the upper compartment door header and the box pan of the door.

This compartment shall have the following items:

- The diesel engine driven generator.
- There shall be one (1) OnScene Solutions LED light stick mounted vertically inside this compartment. Each light stick shall include a 36" section above the subframe and an 18" section below the subframe. There shall be 30 LEDs per 18” light and 60 LEDs per 36” light. The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty.

CURBSIDE COMPARTMENT - FRONT (C1)

The interior useable compartment width shall be approximately 46.0" wide.

The approximate compartment door opening shall be 39.0" wide.

This compartment shall have a horizontally hinged box pan style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 3/16" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

This compartment shall have the following items:

- The cab tilt control pendant.
- An air conditioning system compressor shall be located in this compartment.
- There shall be one (1) OnScene Solutions LED light stick mounted horizontally inside this compartment. Each light stick shall include a 36" section above the subframe and an 18" section below the subframe. There shall be 30 LEDs per 18” light and 60 LEDs per 36” light. The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty.

CURBSIDE COMPARTMENT - INTERMEDIATE (C2)

The interior useable compartment width shall be approximately 46.0" wide.

The approximate compartment door opening shall be 39.0" wide.

This compartment shall have a horizontally hinged box pan style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 3/16" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

This compartment shall have the following items:

- An air conditioning system compressor shall be located in this compartment.
- There shall be one (1) OnScene Solutions LED light stick mounted vertically inside this compartment. Each light stick shall include a 36" section above the subframe and an 18" section below the subframe. There shall be 30 LEDs per 18” light and 60 LEDs per 36” light. The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty.

CURBSIDE COMPARTMENT - REAR (C3)

- There shall be one (1) 12V outlet(s) provided in the front face of the component console.

The interior useable compartment space shall be approximately 70.0" wide.

The approximate compartment door opening shall be 63.0" wide.

This compartment shall have a horizontally hinged box pan style door fabricated of 1/8" thick smooth aluminum. The inner liner of the door shall be 3/16" thick smooth aluminum with an unpainted finish. The door exterior shall be painted job color.

The hinged door(s) shall have a stainless steel 6" Hansen offset bent D-ring locking handle. A gasket shall be placed between stainless steel handle and door. Door latches shall be a two-point (top and bottom) rotary slam, double-catch latch, recessed inside the double panel door with striker plate.

The hinged door(s) shall have a pair of tailgate style mechanisms to stop the door at 90 degrees. Each door shall be capable of being closed without unlatching.

This compartment shall have the following items:

The removable access stairway for the command area shall be stored in this compartment.

- There shall be one (1) OnScene Solutions LED light stick mounted vertically inside this compartment. Each light stick shall include a 36" section above the subframe and an 18" section below the subframe. There shall be 30 LEDs per 18” light and 60 LEDs per 36” light. The light stick shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty.

COMPARTMENT C4 TECHNICAL PANEL

A exterior compartment shall be located directly by above compartment C3. A horizontally hinged lift-up double pan door shall be provided with lockable D-ring handle. Technical component connections shall be mounted in console so that connections are angled towards ground (see sketch provided by customer).

There shall be electrical outlet(s) located in patch panel compartment.

- There shall be two (2) 12V outlet(s) provided in the front face of the component console.
  - The 120 volt receptacle shall be 20 amp, straight-blade (NEMA 5-20R).

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 black.

- Four (4) small tie off point(s) shall be furnished and installed on the body roof along roof radius for securing tarps or aerial antennas.

ROLL-OUT AWNING STREETSIDE

A heavy duty canopy awning shall be installed on the apparatus body. The awning shall be approximately 11 feet long with approximately 8' of extension length.

The awning shall be manufactured with satin finish extruded aluminum arms and braces. The arm channels shall utilize nylon bearings for a smooth operation. Awning shall lock while in stored position to prevent any rattling during travel. Awning shall lock and unlock with a remote brake control located on awning arm, not requiring the use of a wand.

Features of the awning are:
- Built-in Thin-Lite 12 volt amber fluorescent light
- Awning hangers
- Built-in awning tie downs to hold awning steady in a breeze
- Durable multi-layer laminated vinyl fabric that resists scratches, stains, fading and mildew
- Alumaguard metal wrap cover

- The awning color shall be White (5217).

ROLL-OUT AWNING CURBSIDE

A heavy duty canopy awning shall be installed on the apparatus body. The awning shall be approximately 14 feet long with approximately 8' of extension length.

The awning shall be manufactured with satin finish extruded aluminum arms and braces. The arm channels shall utilize nylon bearings for a smooth operation. Awning shall lock while in stored position to prevent any rattling during travel. Awning shall lock and unlock with a remote brake control located on awning arm, not requiring the use of a wand.

Features of the awning are:
- Built-in Thin-Lite 12 volt amber fluorescent light
- Awning hangers
- Built-in awning tie downs to hold awning steady in a breeze
- Durable multi-layer laminated vinyl fabric that resists scratches, stains, fading and mildew
- Alumaguard metal wrap cover

- The awning color shall be White (5217).

EXTERIOR REMOVABLE DESK

A removable desk shall be provided stored in exterior compartment and capable of being mounted to side of body adjacent to patch panel compartment. Desk shall be fabricated of smooth aluminum with grey hammertone powder coated finish.

EXTERIOR DRI-ERASE BOARD

A removable dri-erase board shall be provided that attaches to side of body adjacent to removable desk.

WALK-IN INTERIOR FEATURES:

MAGNETIC WHITEBOARD

There shall be wall mounted magnetic whiteboard surfaces located in the walkin interior body where ever possible and practical.

CAB/BODY WALK-THROUGH CONNECTION

The front center of the rescue body shall be interconnected with the rear crew area of custom cab through a weather tight walk-through opening. The opening shall be designed to allow the custom cab to tilt forward without disconnecting an attached type seal between the cab and body. The opening shall be approximately 24" wide x 70" high (sized to match the cutout in the rear wall of the cab).

The front of the body shall be cut out to match the cab opening. Additional reinforcements with metal angle or tubing shall be provided to back of cab or front of body, if necessary so that the walk-through opening weakens neither the cab nor body integrity.

The connection shall be weather resistant, yet provide the cab and body to move independent of each other. A flexible 3” rubber weather strip shall be attached to a stainless steel sheet metal frame around the perimeter of the opening in the back wall of the cab. A drip rail shall be provided on front of body above the opening to channel water to both sides of opening. Stainless steel scuff panels shall be provided on back of cab were the rubber seal on body comes in contact with cab.

A formed metal frame shall be bolted to the front of the body. The body-mounted frame W be provided where the rubber seal comes into contact with the body. The framework shall be painted to match the body color.

The base of the opening shall be covered with a 3/16" aluminum tread plate full width panel, which will overlap from the cab to body so that the rubber seal can not be damaged.

Full width padded foam cushion head bumpers shall be provided on both sides of opening. Head bumpers shall be covered with matching interior vinyl and bolted to each side of walk-through.

CUT OUT IN REAR CAB WALL

The rear wall of the custom cab shall be cut out 24" wide for walk-thru application. The height of the cutout shall be determined by the cab structure in the rear wall and the roof. The opening shall be completed by the custom cab/chassis manufacturer to assure proper cab structural integrity and completed final interior finish.

INTERIOR CAB AND BODY WINDOW COVERS

An interior window cover shall be provided for each window of the chassis cab and the apparatus body. The window covers shall be of Coverlight Select 22 oz. material with snap-on type fasteners. The snap-on fasteners shall be installed around each window in the cab and body to allow each window to be covered. Window covers will be light gray.

Note covers for driver & officer windshields shall also be provided.

DROP DOWN CAB CURTAIN

A drop-down style curtain will be mounted from the ceiling of the cab. It shall be positioned directly behind the Driver and Officer seats so as to separate the front and rear portions of the chassis cab.

The curtain shall be made of Coverlight Select, 22 oz. material and weighted along the bottom edge. When the curtain is not in use it shall be rolled up with snap-on type fasteners securing it against the cab ceiling. The curtain will be light gray.

Window covers shall be provided with Velcro or equal straps at top of window so covers can be rolled up and held open.

ESCAPE HATCH AND SKYLIGHT

The center of the apparatus roof area shall be specially reinforced for the installation of a hinged door. The opening shall be capable for use as an escape hatch, ventilation and supplemental light in the interior of the body.

The opening shall be approximately 26" x 26" in size and equipped with a 3/16" aluminum door with 1/8" brushed aluminum interior box pan. The opening shall be framed with a raised 1" lip to prevent water from entering the opening and a weatherproof gasket. The door shall flange down around the roof framing and slope forward so as not to hold water. A interior 1/4 turn butterfly type latch shall be provided to hold hatch closed. One gas piston type door check to hold door in open position and that can be closed without unlatching shall be bolted to opening frame and door box pan.

The hatch shall be specially reinforced for the installation of a large skylight. The skylight shall be 20" x 20" in size with clear 1/4" Lexan or safety glass panel. The roof skylight shall be mounted in standard automotive rubber window mounting and shall be completely weatherproof and watertight.

SLIDING POCKET DOOR

There shall be two (2) sliding pocket doors provided on interior of walk-in body area. Pocket doors shall be fabricated from 1/8" smooth aluminum and be approximately 1-1/2" thick and hang on adjustable pocket door hardware. The doors shall be painted to match the interior wall color.

A stainless steel handle shall be provided on each side of door. The doors shall be equipped with a pneumatic cylinder which will "over-center" to hold the door in open and closed positions.

The doors shall be located as follows;

One in the opening between the cab area and the operations area, this door shall be capable of being locked.
One in the opening between the operations area and the conference room capable of being locked from conference area..

Each pocket door shall be provided with a audible seal at top, to reduce sound as mush as possible.

SIDE ENTRY DOOR

Access to the interior body compartment shall be provided through a side entry door. The door opening shall be approximately 31" wide x 72" high.

Construction of the side entry door shall be with 1/8" aluminum exterior smooth plate, the interior door pan being constructed from 1/8" aluminum tread plate.

The door shall be hung on full height 14 gauge stainless steel hinge, with a 1/4" stainless steel pin. The hinge shall be bolted to the door and body with stainless steel machine screws at offset 5" centers. The hinge shall be slotted horizontally and vertically for ease of adjustment. A polyester barrier film gasket shall be placed between the stainless steel hinge and door.

The latch mechanism shall include a paddle handle on inside and a locking Hansen offset bent "D"-ring handle on exterior. A polyester barrier film gasket shall be placed between the stainless steel handles and the aluminum door panels. The door latch shall be a double catch two-point safety slam latch recessed inside the double panel door with strike plate mounted top and bottom of door frame.

ENTRY HANDRAILS

There shall be two (2) handrails provided at entry door, one (1) vertical on exterior of body on door handle side, and one (1) on inside of door. The interior handrail shall be angled for optimum use when entering or exiting the walk-in portion of the body.

Handrails shall be NFPA compliant 1-1/4" extruded aluminum tubing with chrome plated end stanchions.

WINDOW(S)

There shall be one (1) 18" wide x 22" vertical sliding window(s) installed in the entrance door. Each window shall have tinted automotive type safety glass mounted in an extruded aluminum frame. The frame shall have a black anodized finish.

SWING-DOWN ENTRY STEPS

Body side entry shall be provided with swing-down entry steps that store under body entry door when not in use.

INTERIOR SPECIFICATIONS

INTERIOR INSULATION

Following the sheet metal fabrication the roof area, upper exterior walls and the entry door of the apparatus body shall be insulated with 1-1/2" rigid polyurethane foam insulation. This insulation shall be the type that will not absorb moisture, move once in place or deteriorate. Mat type fiberglass or spray in foam insulation are not acceptable.

INTERIOR FINISH

The interior of the apparatus body shall have a fully maintenance free and durable finish. The interior finish shall be installed on the ceiling, front wall, and interior side walls from top of exterior compartments to ceiling height.

The interior panels shall be installed with sheet metal screws with white plastic plugs covering the screws. The seams between FRP panels, interior corners, and exterior corners shall be trimmed with white plastic molding.

The interior finish shall be bright white pebble grain FRP.

INTERIOR WALKWAY FLOOR

There shall be Lonseal, Loncoin-II material installed on the floor substrate. The material shall be installed with Manufacturer recommended adhesives. Care shall be taken to eliminate seams.

The material shall be black in color (Loncoin-II - Black Onyx).

INTERIOR SUB-FLOOR

Above the body subframe shall be an isolation sheet that shall prevent outside elements from permeating the full length sound and thermal barrier of 3/4" thick marine grade plywood. The sheet shall be fabricated from the same type of material as is used in the subframe. The isolation sheet shall be flanged on both sides with a 1" high vertical break.

AIR CONDITIONER SYSTEM

The apparatus body shall be provided with an "off roof" Dometic Cruisair air conditioning system. The system shall consist of a three (3) remote mount Type EBO, 230 volt AC cooling units mounted in the interior rooms, one (1) 14,000 Btu/hr, 530 cfm, 1.6 amp, and two (2) 7,000 Btu/hr, 300 cfm, 1.5 amp each. Each cooling unit is a compact ductable unit with a rotatable variable speed blower, insulated condensate drip pan with anti-slosh, antifungal foam lining, with an air filter. Interior air temperature will be controlled by a wall mounted SMX Series computerized control.

The individual cooling units shall be connected to two (2) undercarriage mounted Type ACA, 230 volt AC, 23/9 amps start/full-load, 14, 000 Btu/hr each condensing units. (Size: 26" L x 18" D x 15" H, Weight: 44 lbs.) Each condensing unit features refrigerant condenser, compressor and associated electrical and mechanical components in an aluminum enclosure. Refrigerant connections are located on the front of unit. Blower type unit pull air in through the coil in back and discharge in back through the bottom or front of unit.

The system will be completely tested prior to delivery for cooling capabilities and refrigerant line leaks. The entire system shall be designed and installed per Dometic Cruisair installation requirements for air flow, refrigerant line length and sizing, and condenser cooling and air flow.

STREETSIDE INTERIOR AREA

SLIDE-OUT EXTENSION

There shall be one (1) "slide-out" section(s) which shall extend approximately 32" as measured from the outside of the body. The extendable module shall be approximately 124.5" in length (116.5" interior) and the interior height shall be approximately 9" less that the interior height of the body walkway. The installed module shall provide a water tight seal in both the fully extended and the retracted positions.

The slide-out section shall utilize smooth operating, quiet gear and rack system. Systems using hydraulic components will NOT BE ACCEPTABLE. There shall be only two (2) serviceable items - the 12 vdc motor and the electric control switch. The system shall use a heavy duty, positive, 100% synchronized gear and rack system to prevent binding during the extend or retract cycle. The rack system shall be rated for up to 1,500 pounds. A 3-position, momentary type rocker switch shall be used to operate the slide-out wall system. A manual override shall be provided, in the event of a system failure.

The slide-out section shall be framed with 2" x 2" x 1/4" 6061-T6 alloy aluminum. The frame structure shall be covered with no less than 1/8" thick 3003-H14 smooth aluminum.

There shall be two (2) flashing LED warning lights with red lenses, one at each end of the slide-out section. The lights shall activate and be visible when the unit is extended.

All electrical wiring installed in the slide-out wall shall run through a boxed type conduit at the lower corner of the system. All wiring shall be enclosed in a flexible, moisture resistant, reinforced conduit, with proper seal tight connectors and hardware. Access shall be provided for inspection of all wiring and the gear and rack mechanism.

The Command Center "Slide-out" must be able to withstand years of rugged service and wear. For this reason, this design, metal thickness and attachments must be strictly adhered to. RV type slide-outs or slide-outs using light weight metal or fiberglass shall not be acceptable.

WINDOW

One (1) 18" wide x 22" high vertical sliding window shall be installed in the forward facing wall of the slide-out module.

WINDOW

One (1) 18" wide x 22" high vertical sliding window shall be installed in the rearward facing wall of the slide-out module.

INTERIOR CABINET - COUNTER HEIGHT

There shall be one (1) interior counter height cabinet(s) provided below desk and between specified seats. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray or black. Each cabinet shall be approximately 27" W x 28" H x 22" D.

- The above cabinet(s) shall have a vertically hinged aluminum door(s) and painted with a hammer tone powder coat paint finish to match cabinet color choice.
- There shall be two (2) vertically adjustable shelves in each of the above cabinets.

INTERIOR CABINET - OVERHEAD

There shall be three (3) overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray. Each cabinet shall be approximately 36" x 14" x 14".

- The above cabinet(s) shall have sliding steeldoors painted white.

INTERIOR DESK

The interior of apparatus shall be provided with a desk top full width of slide-out which shall be 24" deep and located approximately 30" from floor. The front edge of the desk top shall be reinforced with 2" x 2" tubing in order to support a person sitting on the edge of the desk.

The desk top surface shall be fabricated of 3/16" smooth aluminum. It shall have a 2" vertical back splash along the back edge and a 2" vertical downward edge along front to cover the 2" x 2" reinforcement. There shall be 2-1/2" diameter holes with plastic edge grommet provided at each rear corner for wiring of future equipment located on the desk top.

SLIDE-OUT PENCIL DRAWERS

There will be one (1) slide-out pencil drawers provided under the desk top.

INTERIOR SEATS

Two (2) Herman Miller, highly adjustable Aeron Chairs furnished and installed in the body command area slide out.

Each chair shall have a Kinemat tilt mechanism that allows the body to pivot naturally and simultaneously at the ankles, knees, and hips providing a smooth ride and proper support from forward-leaning to reclining postures.

There shall be lumbar adjustment vertically through 4 1/2-inch height range. Its depth can be set at 3/4 inch or 1 1/4 inches.

There shall be a suspension system fabricated from unique Pellicle material; the Aeron chair distributes weight evenly over the seat and back, conforming to each person's shape. The material also lets air pass through, adding to long-term comfort by preventing body-heat build-up.

The armrests shall be independently adjustable with settings that pivot inward 17.5 degrees for keying and outward 15 degrees. Arm height adjusts independently within a four-inch vertical range.

The stock Herman Miller caster wheel assembly shall be removed and the base of the stock pedestal shall be affixed to the glider mechanism recessed in the slide out floor.

The base of the chair pedestal shall be attached to a custom manufactured glider base that will allow up to 7 inches of fore and aft positioning. The glider base shall not require a mechanical lock or release devices to slide.

STREETSIDE INTERIOR AREA (IS3)

DATA RACK

A Middle Atlantic Products roll-out and rotating model # WR-37-32, with 37 rackspaces, shall be provided directly behind wall between central communications and rear conference area on streetside. Overall dimensions of rack shall be 76.6” H x 24” W x 32.8” D. Useable height shall be 64.7” rackspaces, useable depth shall be 26”. Rack shall be fully welded construction and provide a 750 lb. weight capacity with proper distribution.

Rack shall be constructed of steel and finished in a durable black powder coat paint. The WR shall have a solid locking rear door and have a removable rear electrical knockout panel installed in base, and removable rear electrical knockouts with BNC knockouts for UHF/VHF antennas installed in top. A 1/4-20 threaded grounding and bonding stud shall be installed in base of enclosure.

Rack shall be warranted to be free from defects in material or workmanship under normal use and conditions for the lifetime of the product.

In addition the WR shall be provided with model #WRFD-37 reinforced 16-gauge solid steel front door, Integrated fan tops with proportional speed thermostatic fan control, and Vertical outlet strip model #PD-2415SC-NS. A minimum 37 amp UPS (uninterruptable power supplies) with surge protection shall be located in data rack.

An exterior body hinged door shall be provided allowing access to rear of data rack. Door shall be capable of swinging past 90 degree and be provided with keyed lock.

STREETSIDE INTERIOR AREA (IS4)

INTERIOR BENCH SEAT

The interior rear streetside corner of body shall be provided with a bench seat located above the exterior Compartment S3. Seat will be approximately 150" wide extending full width of Conference Area.

The seat shall be fabricated of 3/4" exterior grade plywood with 3" thick foam and heavy duty vinyl covering. The seat backrest shall be approximately 12" high x 2" thick and constructed the same as the seat.

CURBSIDE INTERIOR AREA

SLIDE-OUT EXTENSION

There shall be one (1) "slide-out" section(s) which shall extend approximately 32" as measured from the outside of the body. The extendable module shall be approximately 84" in length and the interior height shall be approximately 9" less that the interior height of the body walkway. The installed module shall provide a water tight seal in both the fully extended and the retracted positions.

The slide-out section shall utilize smooth operating, quiet gear and rack system. Systems using hydraulic components will NOT BE ACCEPTABLE. There shall be only two (2) serviceable items - the 12 vdc motor and the electric control switch. The system shall use a heavy duty, positive, 100% synchronized gear and rack system to prevent binding during the extend or retract cycle. The rack system shall be rated for up to 1,500 pounds. A 3-position, momentary type rocker switch shall be used to operate the slide-out wall system. A manual override shall be provided, in the event of a system failure.

The slide-out section shall be framed with 2" x 2" x 1/4" 6061-T6 alloy aluminum. The frame structure shall be covered with no less than 1/8" thick 3003-H14 smooth aluminum.

There shall be two (2) flashing LED warning lights with red lenses, one at each end of the slide-out section. The lights shall activate and be visible when the unit is extended.

All electrical wiring installed in the slide-out wall shall run through a boxed type conduit at the lower corner of the system. All wiring shall be enclosed in a flexible, moisture resistant, reinforced conduit, with proper seal tight connectors and hardware. Access shall be provided for inspection of all wiring and the gear and rack mechanism.

The Command Center "Slide-out" must be able to withstand years of rugged service and wear. For this reason, this design, metal thickness and attachments must be strictly adhered to. RV type slide-outs or slide-outs using light weight metal or fiberglass shall not be acceptable.

WINDOW

One (1) 18" wide x 22" high vertical sliding window shall be installed in the forward facing wall of the slide-out module.

WINDOW

One (1) 18" wide x 22" high vertical sliding window shall be installed in the rearward facing wall of the slide-out module.

INTERIOR CABINET - OVERHEAD

There shall be two (2) overhead cabinet(s) provided on interior. Cabinet(s) shall be constructed of 1/8" smooth finish aluminum, and painted with a hammer tone powder coat paint finish for a hard durable surface. Paint color shall be gray or black. Each cabinet shall be approximately (insert actual dimensions).

- The above cabinet(s) shall have sliding Lexan doors.

INTERIOR DESK

The interior of apparatus shall be provided with a desk top full width of slide-out which shall be 24" deep and located approximately 30" from floor. The front edge of the desk top shall be reinforced with 2" x 2" tubing in order to support a person sitting on the edge of the desk.

The desk top surface shall be fabricated of 3/16" smooth aluminum. It shall have a 2" vertical back splash along the back edge and a 2" vertical downward edge along front to cover the 2" x 2" reinforcement. There shall be 2-1/2" diameter holes with plastic edge grommet provided at each rear corner for wiring of future equipment located on the desk top.

SLIDE-OUT PENCIL DRAWERS

There will be one (1) slide-out pencil drawer provided under the desk top.

INTERIOR SEATS

Two (2) Herman Miller, highly adjustable Aeron Chairs furnished and installed in the body command area slide out.

Each chair shall have a Kinemat tilt mechanism that allows the body to pivot naturally and simultaneously at the ankles, knees, and hips providing a smooth ride and proper support from forward-leaning to reclining postures.

There shall be lumbar adjustment vertically through 4 1/2-inch height range. Its depth can be set at 3/4 inch or 1 1/4 inches.

There shall be a suspension system fabricated from unique Pellicle material; the Aeron chair distributes weight evenly over the seat and back, conforming to each person's shape. The material also lets air pass through, adding to long-term comfort by preventing body-heat build-up.

The armrests shall be independently adjustable with settings that pivot inward 17.5 degrees for keying and outward 15 degrees. Arm height adjusts independently within a four-inch vertical range.

The stock Herman Miller caster wheel assembly shall be removed and the base of the stock pedestal shall be affixed to the glider mechanism recessed in the slide out floor.

The base of the chair pedestal shall be attached to a custom manufactured glider base that will allow up to 7 inches of fore and aft positioning. The glider base shall not require a mechanical lock or release devices to slide.

AM/FM RADIO

An AM/FM radio shall be located in streetside slide-out with recessed cieling mounted speakers.

CURBSIDE INTERIOR AREA (IC3)

DATA RACK

A Middle Atlantic Products roll-out and rotating model # WR-37-32, with 37 rackspaces, shall be provided directly behind wall between central communications and rear conference area on streetside. Overall dimensions of rack shall be 76.6" H x 24" W x 32.8" D. Useable height shall be 64.7" rackspaces, useable depth shall be 26". Rack shall be fully welded construction and provide a 750 lb. weight capacity with proper distribution.

Rack shall be constructed of steel and finished in a durable black powder coat paint. The WR shall have a solid locking rear door and have a removable rear electrical knockout panel installed in base, and removable rear electrical knockouts with BNC knockouts for UHF/VHF antennas installed in top. A 1/4-20 threaded grounding and bonding stud shall be installed in base of enclosure.

Rack shall be warranted to be free from defects in material or workmanship under normal use and conditions for the lifetime of the product.

In addition the WR shall be provided with model #WRFD-37 reinforced 16-gauge solid steel front door, Integrated fan tops with proportional speed thermostatic fan control, and Vertical outlet strip model #PD-2415SC-NS. A minimum 37 amp UPS (uninterruptable power supplies) with surge protection shall be located in data rack.

An exterior body hinged door shall be provided allowing access to rear of data rack. Door shall be capable of swinging past 90 degree and be provided with keyed lock.

Data Rack shall be provided by customer.
Ordered through Harmer Communication

CURBSIDE INTERIOR AREA (IC4)

The specified TV and Smart Board shall be located on rear wall of the slide-out above base cabinet.

CONFERENCE TABLE

The interior of the apparatus shall be provided with two (2) conference tables, location and sizes below. The desktop surface shall be fabricated of 3/16" smooth aluminum and the structure shall be 2" x 2" aluminum tubing powdercoated to match the interior. The tables shall be reinforced with aluminum tubing to support personnel sitting on edge of the desk. The corners of the desk top shall be radiused.

There shall be a 3" diameter hole in the center of each conference table to allow access to below desk power and network connections.

The location and size of the conference tables will be;

One (1) in the front command area approximately 44" x 48" (front to back) with a recessed map storage area and hinged cover.

One (1) in the rear conference area approximately 36" x 30" (front to back) flip-down style located on rear wall below LCD/SmartBoard display.

INTERIOR BENCH SEAT

The interior rear curbside corner of body shall be provided with a bench seat located above the exterior Compartment C3. Seat will be approximately 150" wide extending full width of Conference Area.

The seat shall be fabricated of 3/4" exterior grade plywood with 3" thick foam and heavy duty vinyl covering. The seat backrest shall be approximately 12" high x 2" thick and constructed the same as the seat.

REMOVABLE FLIP-UP DESK

six (6) removable flip-up desks shall be provided (three at each bench seat). Each desk to have a writing surface approximately 18" x 12" mounted on a post that fits into a reciever located on front face of bench seat riser. Each desk shall fold flat and be able to be stored under bench seat.

AM/FM RADIO

An AM/FM radio shall be located in streetside slide-out with recessed cieling mounted speakers.

12 VOLT ELECTRICAL SYSTEM

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.

12 VOLT MULTIPLEX CONTROL CENTER

The apparatus shall have a multiplexed 12 volt electrical system that will provide complete diagnostic capability. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The system shall be node based to maximize stability so that failure of one node does not affect the operation of the other nodes. The system shall use shielded twisted-pair wire for transmission of system function signals. The shielded wire shall provide protection against EMI and RFI noise interruptions.

The multiplex system shall be responsible for providing power management functions as well as load shedding. The warning light system shall be controlled by the multiplex system. The system shall be capable of displaying text and/or graphic messages on a display module. The system shall be based on solid-state technology and shall include self-contained diagnostic indicators.

COLOR VISTA III DISPLAY

There shall be two (2) chassis supplied full color display that incorporates seven switches with custom legends and has a wide temperature operating range. The display panel shall be the point of interaction with the entire 12 volt electrical system. The display shall respond with text and graphic images to provide fault and condition messages to the Operator.

- The 12 volt electrical distribution panel shall be located in the curbside front lower compartment.

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. The switch and switch solenoid shall be supplied and installed by the cab/chassis manufacturer.

BATTERY SOLENOID

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

BATTERY CHARGER

One (1) Xantrex model XC5012 battery charger, with 120 VAC input and 50 amp, 12 volt output shall be provided. This system shall have a multiplex charging mode which employs the 3-stage charging algorithm: Bulk, Absorption, and Float. During the Bulk stage the battery is accepting high current. In the Absorption stage the battery voltage is held constant and the current declines. Finally, in the Float stage, the charger continues to provide voltage at a lower level to maintain the battery in a fully charged state. If there is no load on the battery, it will typically draw very little current. The charger, however, is able to provide current to its full rating to power DC loads on the battery. In float, if batteries are very new or a battery is on the low end of the size range and if it is fully charged to the point where it will not accept any more current, then the charger will enter an adaptive float/no float behaviour where it shall alternate between float charging (flo) and resting the battery (rdy).

A remote bar graph type indicator panel shall be provided for showing status of battery charger.

The charger shall have a EMC FCC Class B Approval, **NO EXCEPTIONS**.

SHORE POWER PLUG

One (1) Kussmaul 30 amp "Super Auto-Eject" shore power plug(s) shall be furnished and installed wired to the specified Fleet Power 2500-12 inverter/cahrger unit. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged.

- The Auto-eject outlet cover shall be white.
- The shorepower plug receptacle shall be located above genrator compartment door.

ENGINE COMPARTMENT LIGHT

Engine compartment light(s) shall be supplied and installed by the cab/chassis manufacturer for illumination during service and maintenance.

MAP LIGHT

There shall be six (6) 24" goose neck 12 volt map light(s) furnished and installed in the interior body. The exact location shall be;

Two (2) at cab dispatch ceiling.
Two (2) one at each streetside OPS slide-out position.
Two (2) one at each curbside OPS slide-out position.

CAB HAZARD WARNING LIGHT

A red "HAZARD" warning light shall be supplied and installed by the cab/chassis manufacturer. 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".

BACK-UP ALARM

An electronic backup alarm shall be supplied and installed by the cab/chassis manufacturer. The backup alarm shall actuate automatically when the transmission gear selector is placed in reverse.

WALK-IN INTERIOR LIGHTS

There shall be eight (8) Weldon recessed 7" diameter interior dome light(s) with clear lens provided with a switch at the entry door for body 12 volt interior lighting.

Two (2) located in cab dispatch area.
One (1) centered over operations area table.
One (1) over curbside body entry door.
One (1) centered between two data racks.
Three (3) located in conference area.

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 60R00XRR 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 the rear of the apparatus body for the 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 the 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 the chassis.

STEP LIGHTS / GROUND LIGHTS

There shall be three (3) 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 rear of the 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

The siren control head shall be supplied and installed by the cab/chassis manufacturer.

SIREN SPEAKER

The siren speaker(s) shall be supplied and installed by the cab/chassis manufacturer.

SIDE SCENE LIGHTS

Four (4) Whelen 900 series (9" x 7") Opti-Scene lights with gradient lens and chrome flange shall be provided, two (2) each side of upper body.

Two (2) switches shall be provided, one (1) for the streetside scene lights, and one (1) for the curbside scene lights.

REAR SCENE LIGHTS

Two (2) Whelen 900 series (9" x 7") Opti-Scene lights with gradient 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.

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

ZONE A - FRONT WARNING LIGHT

There shall be one (1) Whelen Edge FN72QLED LED 72" lightbar permanently mounted to the cab roof.

The lightbar configuration (streetside to curbside) shall be:

SECTION	INTERNAL COMPONENTS	LENS COLOR
Section 1:	- One (1) Blue Linear LED - Side Facing - One (1) Blue Corner LED	Clear
Section 2:	Blue Linear LED	Clear
Section 3:	Clear Linear LED	Clear
Section 4:	Clear Halogen (Take-down)	Clear
Section 5:	Blue Linear LED	Clear
Section 6:	Whelen 9592 Opticom emitter	Clear
Section 7:	Blank	Clear
Section 8:	Blue Linear LED	Clear
Section 9:	Clear Halogen (Take-down)	Clear
Section 10:	Clear Linear LED	Clear
Section 11:	Blue Linear LED	Clear
Section 12:	- One (1) Blue Linear LED - Side Facing - One (1) Blue Corner LED	Clear

The lightbar shall be separately switched at the 12 volt control panel.

All clear lights shall shut down when the parking brake is set to comply with "Blocking" mode requirements as outlined in NFPA 1901.

ZONES B AND D - SIDE WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") surface mount LED lights provided, one (1) on each side of the apparatus in the upper rearward corners. Each light shall have a blue LEDs with clear lens and chrome finished flange.

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

There shall be two (2) Whelen 900 series (9" x 7") surface mount LED lights provided, one (1) on each side of the apparatus in the upper forward corners. Each light shall have a blue LEDs with clear lens and chrome finished flange.

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

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") LED lights provided on the rear of the body, one (1) each side in the upper corners. Each light shall have a blue LEDs with clear lens and chrome finished flange.

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

UPPER LEVEL WARNING LIGHT OPTIONS

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.

LOWER LEVEL WARNING LIGHTS

ZONE A - FRONT WARNING LIGHTS

The front lower warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Whelen lights to complete an NFPA compliant lower level warning light system. The front lower warning lights shall be switched from 12 volt control panel.

ZONES B AND D - SIDE WARNING LIGHTS

There shall be four (4) Whelen model 600 (6" x 4") LED lights provided, two on each side, located near the corners of the apparatus. Each light shall have a blue LEDs with clear lens and a chrome finished flange.

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

Zones B & D - Sides Midship

There shall be two (2) Whelen model 600 (6" x 4") LED lights provided, one (1) on each side, located between the corners of the apparatus so that there is no more than 25 feet between side lower warning lights. Each light shall have a blue LEDs with clear lens and a chrome finished flange.

ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen 600 series (6" x 4") LED lights provided on the rear face of the apparatus, one (1) each side near the corners. Each light shall have a blue LEDs with clear lens and chrome finished flange.

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

LINE VOLTAGE SYSTEM

DIESEL GENERATOR

One (1) Onan CMQD model 12.0 HDKCD, 12,000 watt, 120/240 Volt, 100/50 amp, 60 Hertz, electrical generator with electric start shall be provided. Generator shall be capable of operating approximately 6 hours (full load) on 13 gallons of fuel. Generator shall be equipped with low oil shutdown.

Generator starting system shall be wired to chassis battery system with heavy duty stranded copper cables. Fuel system shall be modified with addition of an electric fuel pump and plumbed to chassis fuel system.

The exhaust shall be piped to the roof of body.

GENERATOR MOUNTING

The generator shall be mounted on rubber vibration isolators. The compartment shall be reinforced where necessary to hold weight of generator.

Generator shall be installed over a stainless steel drip pan with a 1" lip to retain any spillage of oil or fuel. A valve shall be located at generator oil drain outlet and shall be piped to underside of generator compartment with flexible hose and plug. The drain shall be located where easily accessible for generator service.

FUEL SYSTEM

The generator fuel system shall be plumbed to the chassis main fuel tank. A separate fuel line shall be installed directly from the tank, not connected to the truck engine fuel line system. the generator fuel line shall be properly protected and secured inside of chassis frame. A shut-off valve shall be provided between the generator and fuel line as it enters the compartment.

STARTING SYSTEM

The generator starting system shall be powered by chassis battery system with heavy duty stranded copper cables. The starter line shall by-pass the chassis master switch to permit generator operation when the apparatus engine is not running. This starter line shall be of sufficient size for the generator, adequately protected and supported inside the chassis frame area.

SAFETY SHUTDOWNS

The generator shall be equipped with the following safety functions for protection of the generator unit:

- High Temperature Shutdown
- Low Oil Pressure Shutdown

COOLING

Since the generator is air cooled, the ventilation of the generator is crucial. The installation shall permit operation of the unit both while the apparatus is stationary or while it is in motion.

The cooling air flow shall be though stamped louvers in compartment walls or doors, or though a hooded vent opening in the compartment roof.

The louvers or hooded opening shall provide adequate air flow for operation of the generator in stationary or moving position, with the compartment doors closed for only a short period of time. For prolonged operation the compartment doors must be open.

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 COMPARTMENT INSULATION

The generator compartment shall be provided with heavy duty sound insulation applied to walls and ceiling. Insulation shall have a high temperatures rating with a foil facing and attached to walls with a positive type fasteners, glue type adhesive will not be acceptable.

GENERATOR CONTROLS

In addition to generator controls provided at the generator. Controls shall be provided in the cab at the 12 volt control panel. The following controls shall be provided:

- One (1) pre-heat switch (if generator is diesel).
- One (1) start/stop switch.
- One (1) generator running indicator light.

Any generator remote gauges to be located adjacent to load center panel in body walk-in.

CIRCUIT BREAKER BOX

There shall be one (1) Paneltronics line voltage distribution panel and breaker panel located in the front command area of the body. All circuit breakers shall be rated to the wire size and load demand.

There shall be color coded LED indicator lights provided to indicate the status of each branch breaker.

Each individual switch and all meters shall be back lit for identification in low light situations.

The panel shall have two (2) meters, one (1) to monitor frequency and one (1) hour meter to register genset run time.

Each circuit breaker shall be hydraulic/magnetic trip free style with a manual reset.

The Paneltronics panel shall also control the automatic cut over for switching the apparatus from shore to generator power.

The entire panel shall be mounted to a recessed box. The front panel shall be mounted to the box via a vertical piano style hinge that allows the front panel to open for access to the breakers.

SHORE POWER RECEPTACLE

Two (2) 30 ampere, 120 volt, single phase shore power receptacle(s) shall be provided on the apparatus to provide an external power source for apparatus electrical circuits. A matching 30 ampere plug shall be shipped with the apparatus for Fire Department supplied external power source wiring.

Shore power shall be wired to the specified 120 volt, 20 ampere electrical circuits on apparatus (maximum four (4) circuits). Circuits shall be provided with circuit breaker protection with either generator or shore power providing power.

To protect both the generator or external power source from backfeed, a 120 volt, 25 ampere, 4PDT power relay shall be installed. Relay shall cut-off the connection between the generator supply circuit and device circuits when shore power is connected.

One (1) wired to specified inverter.
One (1) wired to outlets at each interior desk position.

SHORE POWER PLUG

Two (2) Kussmaul 30 amp "Super Auto-Eject" shore power plug(s) shall be furnished and installed. The shore power connection shall automatically disengage from vehicle when chassis ignition is engaged.

- The Auto-eject outlet cover shall be yellow.
- The shorepower plug receptacle shall be located above the generator compartment door.

SHORE POWER RECEPTACLE

A 100 ampere, 240 volt, single phase shore power receptacle shall be provided on the apparatus to provide an external power source for apparatus electrical circuits. A matching 100 ampere plug shall be shipped with the apparatus for Fire Department supplied external power source wiring.

Shore power shall be wired to apparatus main circuit breaker in the circuit breaker distribution panel and feed all 120/240 electrical circuits on apparatus.

To protect both the generator and external power source from backfeed, a manual three-way 100 ampere rotary switch shall be installed at the generator control panel, to cut off the connection between the apparatus circuits and the generator when the external power source plug is in use. Switch shall be labeled "SHORE-OFF-GENERATOR".

OUTLETS AND CIRCUITS

The generator shall supply the electrical equipment and outlets 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, 15 amp straight blade style, NEMA 5-15R. Outlet(s) shall be protected by a 15 amp circuit breaker.

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

The outlet(s) will be 120 volt, 15 amp straight blade style, NEMA 5-15R. Outlet(s) shall be protected by a 15 amp circuit breaker.

There shall be sixteen (16) 120 volt straight blade outlet(s) located in the walk-in area of the body.

The outlet(s) will be 120 volt, 15 amp straight blade style, NEMA 5-15R. Outlet(s) shall be protected by a 15 amp circuit breaker.

One (1) at cab map box area for portable chargers.
One (1) cab rear wall at printer/fax area.
Two (2) front face of curbside bench seat in conference area.
Two (2) front face of streetside bench seat in conference area.
One (1) under cab dispatch "L" desk.
Two (2) under OPS streetside slide-out desk.
One (1) at streetside data rack.
One (1) under OPS curbside slide-out desk.
One (1) at curbside data rack.
One (1) under OPS center table.
One (1) at conference area table angled console.
Any other positions required for specified monitors & equipment.

OUTLET STRIP

There shall be seven (7) 120 volt outlet strip(s) approximately 4' long with straight blade household type outlets provided on the interior of apparatus body. 15 ampere circuit breaker protection shall be provided for each strip.

Two (2) under cab dispatch "L" desk.
Two (2) under streetside OPS slide-out desk.
Two (2) under curbside OPS slide-out desk.
One (1) under OPS center table.

INTERIOR BODY 120 VOLT LIGHTING

There shall be twelve (12) 120 volt light(s) installed in the walk-in area of the body. The fixtures shall be single bulb, 22 watt fluorescent lights with fully enclosed protective lens covers, and flush aluminum trim. Each light shall be recessed down the center of the walkway.

The operation of the lights shall be at the entry doorway area. The interior lights shall be wired to the generator system with a 15 amp circuit breaker protection.

INTERIOR LIGHT FIXTURE

There shall be six (6) 120 volt interior, over counter, fluorescent light fixture(s) installed above the desk/deck area. Fixture shall be provided with single bulb and switch on fixture.

Two (2) at cab dispatch cieling.
Two (2) at each streetside OPS slide-out desk.
Two (2) at each curbside OPS slide-out desk.

DIESEL GENERATOR

An Onan model 8HDKAU, diesel driven generator shall be installed on the apparatus. The generator shall be rated at 8,000 watts at 120/240 volts. Current frequency shall be stable at 60 hertz.

Generator features shall include:

- 3-cylinder diesel engine
- Permanent magnet alternator
- Digital voltage regulation with no adjustments required
- Integral enclosed muffler
- USDA approved spark arrestor
- Internal radiator
- Sound insulated cover
- Intake silencer
- Heavy-duty air cleaner
- Maintenance-free electronic governor
- Fused DC circuits
- Automotive type starter
- Overvoltage, low oil pressure, overtemp, overspeed, and overload safeties
- 10 A battery charging
- Hourmeter
- Waterproof connector for remote operation
- Electric fuel pump
- Fuel filter
- Full flow oil filter
- Automatic timed glow plugs for quick easy start

Overall size of generator shall 36" L x 24" W x 22" H and weigh 420 lbs.

WARRANTY PERIOD

Provided such goods are operated and maintained in accordance with Onan's written instructions, Onan warrants that the CMQD Quiet Diesel Series Generators shall be free from defects in material and workmanship for a period of two (2) years or two thousand (2,000) hours, whichever comes first, from the date of delivery to the first purchaser.

GENERATOR MOUNTING

The generator shall be mounted on rubber vibration isolators. The compartment shall be reinforced where necessary to hold weight of generator. A valve shall be provided on the generator oil drain outlet and piped to underside of generator compartment with flexible hose and plug. The drain shall be located where easily accessible for generator service.

FUEL SYSTEM

The generator fuel system shall be plumbed to the chassis main fuel tank. A separate fuel line shall be installed directly from the tank, not connected to the truck engine fuel line system. The generator fuel line shall be properly protected and secured inside of chassis frame. A shut-off valve shall be provided between the generator and fuel line as it enters the compartment.

STARTING SYSTEM

The generator starting system shall be powered by chassis battery system with heavy duty stranded copper cables. The starter line shall by-pass the chassis master switch to permit generator operation when the apparatus engine is not running. This starter line shall be of sufficient size for the generator, adequately protected and supported inside the chassis frame area.

COOLING

Since the generator is radiator cooled, the ventilation of the generator is crucial. The installation shall permit operation of the unit both while the apparatus is stationary or while it is in motion.

The incoming air flow shall be though stamped louvers in compartment walls and/or doors, or though a hooded vent opening in the compartment roof. The louvers or hooded opening shall provide adequate air flow for operation of the generator in stationary or moving position, with the compartment doors closed for only a short period of time. For prolonged operation the compartment doors must be open.

EXHAUST SYSTEM

The generator exhaust system shall be equipped with a residential type muffler for maximum quieting, and black iron rigid pipe to link the generator to the muffler. The exhaust pipe shall be securely supported and shall be shielded or insulated to prevent excessive heating of the compartment.

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 COMPARTMENT INSULATION

The generator compartment shall be provided with heavy duty sound insulation applied to walls and ceiling. Insulation shall have a high temperatures rating with a foil facing and attached to walls with a positive type fasteners, glue type adhesive shall not be acceptable.

GENERATOR INSTRUMENTS AND CONTROLS

To properly monitor the generator performance and load demand during operation, a metering panel shall be provided on the apparatus. This panel shall be located near the circuit breaker panel.

The installation shall be equipped with the following instruments:

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

GENERATOR CONTROLS

In addition to generator controls provided at the generator, there shall be controls provided in the cab at the 12 volt control panel. The following controls shall be provided:

- One (1) pre-heat switch (if generator is diesel).
- One (1) start/stop switch.
- One (1) generator running indicator light.

INVERTER

The apparatus shall be equipped with one (1) Xantrex, model Prosine 3.0 Inverter that provides 120 VAC, 60 cycle, 3000 watt output from 12 VDC.

PROsine 3.0 Protection Features:
- Over-temperature shutdown
- Auto overload protection
- Battery reverse polarity (fuse)
- Short-circuit protection
- Inverter output

PROsine 3.0 Product Features:

True Sine Wave Output (<5%THD): A smooth, step-free waveform delivering dependable and reliable electrical power for even the most demanding and sensitive of loads

Super-Quick Transfer: A maximum detect and transfer time of 20 milliseconds (16 ms typically) ensures critical loads stay powered up when AC power drops away.

Multi-Stage Charger: Can be set for either gel or flooded batteries and delivers 120 amps of charging current for quick, accurate battery charging.

99% Charger Power Factor Rating: Allows operation from smaller generators, as the full 120 amps of charging current requires only 17 Amps of AC input power.

Full Range Operation: Battery banks are often well below the ideal "normal" 12 Volts. To compensate for that fact, the PROsine 3.0 Inverter/Charger delivers its rated 3000 Watts continuous right down to 10.5 Volts input.

High Frequency Switching Technology: Results in a lighter weight and compact design for ease of installation. Actual product weight - 32 lbs.

Functions of the PROsine 3.0 Inverter/Charger:

Inverter Function: When the PROsine 3.0 Inverter/ Charger is in inverter mode, it draws power from a battery and delivers a true sine wave AC output that is the same as or better than the waveform supplied by your local electric utility. In some cases, the PROsine 3.0 Inverter/Charger can deliver an even more stable waveform than your utility-supplied power due to the extensive control circuitry incorporated in the design of the unit.

Charger Function: The “smart" charging capability of the PROsine 3.0 Inverter/Charger provides a multi-stage charge to quickly bring back deep-cycle batteries to their full charge. Using microprocessor control, the PROsine 3.0 Inverter/Charger precisely regulates the voltage and current delivered to the battery, accurately charging the battery without risk of overcharging and battery damage. Depleted batteries are taken through the recommended "Bulk", "Absorption", and "Float" stages and a manually set "Equalize" stage is available to bring flooded batteries up to their peak capacity. The charging algorithm used in the PROsine 3.0 Inverter/Charger is based on the same charge cycle algorithm used in our proven TRUECHARGE battery charger line.

Automatic Transfer Switch: An integral 30 amp rated relay has two functions. When utility AC power fails or is disconnected from the unit, a quick 20 millisecond (maximum) transfer takes place (16 ms typically) and the PROsine 3.0 Inverter/Charger begins inverting, delivering AC power to the loads. When utility AC becomes present again, the control circuit waits for 8 seconds, during which time the unit verifies the stability of the AC source and synchronizes the inverter to the AC source for a smooth, seamless transfer. Battery charging will begin and AC is also fed through the unit to power the AC loads.

Advanced Control System (ACS) panel included with the PROsine 3.0: The ACS Control Panel provides system control and display information via a menu driven, 6-level, multi-functional LCD panel. Detailed information and control is available for: AC information, battery status, inverter mode, charger mode, system info, and Xantrex info. The deluxe ACS Remote Control Panel is included with the PROsine 3.0 Inverter Charger unit. There's no need to pay extra for remote monitoring and control.

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 to indicate purpose. 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.

120 / 240 VOLT SCENE LIGHTING

FRONT CAB-MOUNTED FLOODLIGHT

One (1) Fire Research Focus 500 watt 120 volt quartz floodlight(s) shall be provided on the front face of the chassis cab. Each light shall be mounted in a Brow-style housing.

Each light shall be wired directly to the electrical generator system with Carflex conduit and stranded copper wire. The floodlights shall be protected with circuit breakers rated at the proper amperage and wire size.

Make:Fire Research
Model: Focus
P/N: FCA800-S50

There shall be one (1) switch to control the above scene lights. The switch shall be located in the cab, within reach of the Driver and/or Officer.

SIDE UPPER RECESSED FLOODLIGHTS - STREETSIDE

One (1) Fire Research Focus 500 watt 120 volt quartz floodlight(s) shall be installed in a recess-style housing in the side-upper portion of the body.

Each light shall be wired directly to the electrical generator system with Carflex conduit and stranded copper wire. The floodlights shall be protected with circuit breakers rated at the proper amperage and wire size.

Make:Fire Research
Model: Focus
P/N: FC200-S50

There shall be two (2) switches to control the above scene lights, one (1) for streetside light(s), and one (1) for curbside light(s). The switches shall be located per the itemized compartment list.

SIDE UPPER RECESSED FLOODLIGHTS - CURBSIDE

One (1) Fire Research Focus 500 watt 120 volt quartz floodlight(s) shall be installed in a recess-style housing in the side-upper portion of the body.

Each light shall be wired directly to the electrical generator system with Carflex conduit and stranded copper wire. The floodlights shall be protected with circuit breakers rated at the proper amperage and wire size.

Make:Fire Research
Model: Focus
P/N: FC200-S50

There shall be two (2) switches to control the above scene lights, one (1) for streetside light(s), and one (1) for curbside light(s). The switches shall be located per the itemized compartment list.

REAR UPPER RECESSED FLOODLIGHTS

Two (2) Fire Research Focus 500 watt 120 volt quartz floodlight(s) shall be installed in a recess-style housing in the rear-upper portion of the body.

Each light shall be wired directly to the electrical generator system with Carflex conduit and stranded copper wire. The floodlights shall be protected with circuit breakers rated at the proper amperage and wire size.

Make:Fire Research
Model: Focus
P/N: FC200-S50

There shall be one (1) switch to control the above scene lights. The switch shall be located per the itemized compartment list.

COMMAND AREA TECH EQUIPMENT

The following equipment shall be included to enhance Command and Communications operations:

DC power for the command area to be hot with the chassis master in the off position. Power to come from additional batteries.

Two (2) Bosch 2mm wide angle cameras shall be supplied and mounted, one (1) each side driver and passenger to provide 360 degree surveillance around apparatus. Cameras shall be IP accessible.

COMMAND CAMERA SYSTEM

There shall be one (1) Pelco ES31C22-5N camera system(s) complete with pan & tilt drive system, enclosure with shield wiper, high quality camera and lens. The camera system shall be a high resolution unit with Lowlightä color technology and a 176X zoom lens (22X optical, 8X electronic). There shall be one Pelco KBD300 joystick controller and CM6700 controller.

TELESCOPING PNEUMATIC MAST

The apparatus shall be equipped with one (1) Will-Burt 7-30 heavy duty pneumatic powered telescoping mast(s). The mast shall utilize air from the chassis brake system. Air to operate the telescoping mast must be drawn from a drier system and be regulated to 20 psig and shall have a back pressure protection valve. This valve shall hold back 70 pounds in the air brake system and shall only allow air to pass into the system when the ignition switch is on and the parking brake is set.

A red flashing warning light will be visible to the driver to warn when a light tower is out of roof nested position.

A pneumatic kit to raise and lower the mast shall include air control valve, 0-160 psig air gauge, regulator, 0-30 psig air gauge.

The mast shall be of a free standing design (non-guyed) and use high strength, heat treated aluminum alloy tubes and collars. Each mast section (tube) shall have two full length external keys and nominal .095" wall thickness collars with matching keyways to maintain directional azimuth.

Each mast section and collar shall be of the low friction synthetic bearings for smooth operation and longer life. Bumpers shall be supplied to reduce shock on extension and retraction. All exterior aluminum surfaces shall be anodized and sealed. Fasteners and fittings shall be plated steel or stainless steel for corrosion resistance.

Mast shall be mounted using an internal roof mounting kit.

One (1) maintenance and instruction manual will be provided for the towers on delivery. Wiring schematic, air piping schematic and installation diagrams shall be provided with the manual. Manufacturer's blueprint of tower, complete parts list and bill of materials for towers provided with manuals.

MODEL 7-30 SPECIFICATIONS

Nested height tower only:	6'-8"
Extended height tower only:	29'-1"
Normal payload capacity:	150 lbs.
Number of sections:	6
Tube Diameter	6-3/4" - 3"
Mast Volume:	3.2 cu. ft.
Collar type:	Non-locking
Maximum operating pressure:	35 psi

PNEUMATIC KIT

A pneumatic kit air control assembly (without compressor) shall be provided to control the mast. The assembly includes; a 0- 160 PSIG air gauge, regulator, 0 - 30 PSIG air gauge, and a 3/8" inlet air hose with NPT fittings to provide air from air source.

NYCOIL WIRING (7-30)

A 30' Nycoil conduit measuring 1" ID x 16-1/2" OD coil shall be provided for the 7-30 telescopic mast. A mast bucket shall be provided to hold the Nycoil below the roof line of the truck. The bucket shall be fabricated from .125" smooth aluminum with welded water tight seams. The bucket shall have a 1.25" lip around the top of bucket to secure and seal the bucket to the roof. The bucket shall have an aluminum drain tube welded into the bottom of the bucket to allow water hose to be attached to drain water to the ground.

ELEVATED ANTENNAS

Three (3) radio antennas; one (1) for Daniels 800 MHz, one (1) for Daniels UHF, and one (1) for Daniels VHF radios shall be mounted on a custom bracket mounted on elevated camera mast. The antenna shall be mounted in such a way as to not interfere with the operation of camera system in any way. Antenna cables shall be run through the Nycoil conduit with camera cable.

MAST COVER AND MOUNTING

The above telescoping mast shall have a custom designed, 1/8" smooth aluminum cover (painted body color) provided to store control cables air hose and to protect the mast from the elements. The cover shall be easily removed to allow access to mast for maintenance

The camera nesting location shall be such that mast shall be mounted as low as possible, a interlock shall be provided to eliminate power to camera unless tower is raised.

TELESCOPING LIGHT MAST

The apparatus shall be equipped with one (1) pneumatic powered telescoping floodlighting tower(s). The mast shall utilize air from the chassis brake system. Air to operate the telescoping mast must be drawn from a drier system and be regulated to 20 psig and shall have a back pressure protection valve. This valve shall hold back 70 pounds in the air brake system and shall only allow air to pass into the system when the ignition switch is on and the parking brake is set.

A red flashing warning light will be visible to the driver to warn when a light tower is out of roof nested position.

A pneumatic kit to raise and lower the mast shall include air control valve, 0-160 psig air gauge, regulator, 0-30 psig air gauge.

The mast shall be of a free standing design (non-guyed) and use high strength, heat treated aluminum alloy tubes and collars. Each mast section (tube) shall have two full length external keys and nominal .095" wall thickness collars with matching keyways to maintain directional azimuth.

Each mast section and collar shall be of the low friction synthetic bearings for smooth operation and longer life. Bumpers shall be supplied to reduce shock on extension and retraction. All exterior aluminum surfaces shall be anodized and sealed. Fasteners and fittings shall be plated steel or stainless steel for corrosion resistance.

Mast shall be mounted using an internal roof mounting kit.

One (1) maintenance and instruction manual will be provided for the towers on delivery. Wiring schematic, air piping schematic and installation diagrams shall be provided with the manual. Manufacturer's blueprint of tower, complete parts list and bill of materials for towers provided with manuals.

TELESCOPING LIGHT MAST

MODEL 6-25 SPECIFICATIONS

Nested height tower only:	5'-10"
Extended height tower only:	25'-0"
Normal payload capacity:	150 lbs.
Number of sections:	6
Tube diameter range:	6-3/4" - 3"
Mast volume:	2.7 cu.ft.
Collar type:	Non-locking
Maximum operating pressure:	35 psi

MICROWAVE ANTENNA

Microwave antenna shall be installed on telescopic mast. Customer to supply antenna mounted requirements prior to construction.

ELECTRONIC PATCH PANEL

An electronic patch panel shall be provided on curbside of rear wheel well area for audio, video, etc. input/outputs as follows;

1. Eight (8) composite video inputs (RF)
2. Eight (8) composite video outputs (RF)
3. Four (4) pair RCA audio inputs
4. Four (4) pair RCA audio outputs
5. Four (4) RCA video inputs
6. Four (4) RCA video outputs
7. Four (4) BNC video inputs
8. Four (4) BNC video outputs
9. Four (4) CAT 5 inputs
10. Four (4) CAT 5 outputs
11. One (1) distribution module located in data rack.
12. Four (4) RJ-11 phone jacks.

All wiring shall terminate inside the rear 19" data rack cabinet.

VIDEO MONITORS

Two (2) 20" multi-function flat panel monitors with built-in TV tuner shall be provided, two (2) located in forward operations section centered over streetside slide-out desk. Monitors shall be installed on wall mount brackets.

System shall be complete and fully operational, including all miscellaneous coax cable, 120 volt AC wiring, and cable connections.

The system shall be designed to allow the Fire Department to elevate the surveillance camera to any height up to approximately 25' above the apparatus body. The camera shall supply a picture to each of the specified TV monitors. Each TV monitor shall be an individual set capable of tuning to the surveillance camera, or video recorder.

DVD RECORDER

A Bosch Dibos DVD recorder shall be provided and installed in designated data rack. The DVD recorder shall be wired to outputs from Pelco camera on mast to all Samsung monitors specified.

CONFERENCE MONITOR AND SMART BOARD

A 40" LCD flat screen monitor shall be provided, located at rear conference area wall . Monitor shall be able to display, surveillance camera video, video recorder, computer monitor or the local television stations.

40" screen shall be provided with Smart Board overlay marker board. Marker board uses computer interface to save marker board notes and video image together in digital format.

A 20" touch screen shall be provided adjacent to 40" screen for video control and viewing.

A Dell desktop personel comupter or equal shall be included with monitor/smart board system with a video capture card.

COMMAND CAMERA SYSTEM

There shall be one (1) Pelco ES31C22-5N camera system(s) complete with pan & tilt drive system, enclosure with shield wiper, high quality camera and lens. The camera system shall be a high resolution unit with Lowlightä color technology and a 176X zoom lens (22X optical, 8X electronic).

The camera control system shall contain one (1) KBD300A PTZ control unit and one (1) CM6700-MXB2 switcher/controller.

VEHICLE SATELLITE COMMUNICATIONS SYSTEM

AVL Technologies/Agiosat model AG1288-8WRMV, 8 Watt Ku-Band Mobile VSAT Antenna System shall be installed on vehicle to include:

4.00 Mbps maximum uplink from field location to hub -Vipersat Enabled
1.2 Meter Prime Focus Offset Reflector
Feedhorn Assembly with Transmit Reject Filter plus LNB
RF Interface - Terrasat IBUC 8 Watt Ku-band Block Upconverter
Waveguide WR 75 Flex from Feed Assembly
Coax RG59 run from feed to base plus 15 ft.
Pallet Mount for Permanent Vehicle Integration
Electrical Interface - 15 ft. Cable with Connectors for Controller
TracStar One-button Full Function Rackmount Auto-deploy Controller
Peaking, and Cross-Pol Adjustment using GPS, Compass and Level Sensor Inputs
Certified for Auto-commissioning on Agiosat North American Networks
CDM570L L-Band Satellite Modem
Data rate: 2.4 kbps-5 Mbps BPSK, QPSK, OQPSK, Turbo Board,
IP Module, VMS license, 24 or 48VDC BUC Power Supply
Advantech SatNet S4100 DVB-S2/S Satellite Modem
High-speed Receive Link for the Agiosat Network platform @ up to 36 Mbps
Also capable of 4 Mbps uplink back to satellite on a stand-alone basis
Cisco 1800 Router for DHCP and Inbound QOS with Integrated
8 Port Ether Switch Network Module
Includes AES Chipset, QOS & Header Compression
Tripp-Lite SmartOnline Rack/Tower Mounted Online UPS System 1000VA online (zero transfer time) power conditioner and UPS Maintains 120V +/-2% output during overvoltages to 138V and brownouts as low as 65V. Fault tolerant auto-bypass.
NOTE: Requires 6 RU of rack space - equipment rack sold separately .

Equipment to be provided by customer.
SatCom Systems Inc.

SATELLITE TV SYSTEM

A satellite TV antenna and reciver system shall be installed on vehicle.

Equipment to be provided by customer.
Harmer Communication.

VIDEO SOURCES

One (1) Wingard Sensar III, RV-3090 broadcast TV antenna w/ amplified multi-switch shall be provided and wired to location determined at pre-construction meeting.

RADIO COMMUNICATIONS EQUIPMENT FOR TELEX DISPATCH SYSTEM

The following Radio Communications equipment shall be provided and installed as directed by Maui Police Department;

- Four (4) Daniels Electronics 800MHz repeaters, combined into one transmit antenna mounted on vehicle roof, receivers combined through a multicoupler with the antenna mounted inverted on the camera mast below the camera.
- Two (2) Daniels Electronics UHF repeaters, combined into one transmit antenna mounted on vehicle roof, receivers combined through a multicoupler with the antenna mounted inverted on the camera mast below the camera.
- Two (2) Daniels Electronics VHF repeaters, combined into one transmit antenna mounted on vehicle roof, receivers combined through a multicoupler with the antenna mounted inverted on the camera mast below the camera.
- Six (6) Maui Police Department supplied EF Johnson 5300 Ascend Series 700/800MHz mobile radios with Multi-Net II / P25 Trunking / P25 Conventional / SmartNet/SmartZone protocols installed, mounted in a 19" rack in the vehicle cab, adjacent to the Dispatcher position, accessible for channel selection, with antennas mounted on the vehicle cab roof.
- Two (2) Motorola CDM 1550 LS+ UHF mobile radios with Conventional / LTR / SmartNet/SmartZone protocols installed, mounted in a 19" rack in the vehicle cab, adjacent to the Dispatcher position, accessible for channel selection, with antennas mounted on the vehicle cab roof.
- Four (4) Motorola CDM 1550 LS+ VHF mobile radios with Conventional / Passport / DigitalAstro / SmartNet/SmartZone protocols installed, mounted in a 19" rack in the vehicle cab, adjacent to the Dispatcher position accessible for channel selection, with antennas mounted on the vehicle cab roof.
- Two (2) ICOM IC-A200M VHF-AM radios mounted in a 19" rack in the vehicle cab, adjacent to the Dispatcher position accessible for channel selection, with antennas mounted on the vehicle cab roof.
- Two (2) Nextel mobile cellular phone with base kit will be installed and located per Maui Police Department.

Labor included in 10-AA-1310

RADIO COMMINICATIONS EQUIPMENT TO BE PROVIDED IN BODY

Six (6) 800 Mhz radios to be installed;
Two (2) in streetside operations slide-out.
Two (2) in curbside operations slide-out.
One (1) in conference area.
One (1) in exterior patch compartment.

Two (2) VHF radios to be installed;
One (1) in streetside operations slide-out.
One (1) in curbside operations slide-out.

Two (2) UHF radios to be installed;
One (1) in streetside operations slide-out.
One (1) in curbside operations slide-out.

Two (2) Air-Ground radios to be installed;
One (1) in streetside operations slide-out.
One (1) in curbside operations slide-out.

Equipment to be provided by customer.
Harmer Communications.
Labor included in 10-AA-1310

PANASONIC TELEPHONE SYSTEM

A telephone and intercom system shall be provided and installed with provisions to connect to connected land lines, microwave system provided landlines, and Telular connections as available.

The telephone system shall be accessible from twelve (12) stations located; two (2) at desk in back of cab, eight (8) in the front Command Area, and two (2) in the rear Conference Area. The telephone system shall include the following hardware;

- Five (5) land line jack extension inputs for the telephone system shall be located in exterior compartment.
- One (1) modular Panasonic KX-TA824 electric switching system. The base system has three (3) Central Office (C.O.) lines and eight (8) extensions. (This system is expandable to eight (8) C.O. lines, and twenty four (24) extensions.)
- One (1) Panasonic KX-TA82491 Direct Inward System Access (DISA) / FAX detection card. Note: If a FAX call is received and a CNG tone is detected during the outgoing message, the call will be automatically routed to the designated FAX extension eliminating the need for a dedicated land line and cell line. The card will also allow personnel to call "IN" and to dial an extension directly.)
- One (1) Panasonic KX-T7730B programing telephone with intercom and P/A features.
- Eleven (11) Panasonic KX-T7750B telephones with intercom and P/A features.
- Three (3) Telular Phonecell SX5T (GSM) digitally interfaced to the phone system.
- One (1) VOIP router (2-line) for use with local Roadrunner system.
- Four (4) RJ-11 phone jacks in external patch compartment.

In the event that no cellular service is available, and wireless connections are available, the phone system is to include an interface for landline connection to the Verizon system. The phone system shall interface with the PA system. All telephone lines and cellular antenna cables shall be installed in ENT conduit.

MPD SUPPLIED CATV MODEM

One (1) MPD supplied cable modem and an eight (8) outlet distribution amplifier shall be mounted in streetside cabinet with two (2) runs of coaxial cables terminated with "F" connectors in streetside data rack to the exterior curbside rear wheel well area patch panel location.

DATA NETWORK WIRING

The pre-wiring for a data network shall be provided and installed. All cables shall be stranded CAT6 run in wire raceways to each location identified below and terminated in RJ45 receptacles. All external receptacles shall be waterproof outdoor type. All cable runs shall home run to the lower portion of streetside data rack RJ45 patch panel. A wireless 802.11b/g router shall be provided in lower portion of data rack, and external antennas provided on roof of the vehicle. Locations as follows;

- Four (4) runs to Dispatchers position in cab, two (2) runs per location.
- Sixteen (16) runs to the Operators positions in the forward Command Area, two (2) runs per location.
- Four (4) runs to the Operators positions in the rear Conference Area, two (2) runs per location.
- Four (4) runs to the watertight communications access panel on curbside rear wheel well area.
- System server shall be mounted in the 19" data rack located in rear cab area, adjacent to Dispatcher position.

COMPUTER WORKSTATIONS

Four (4) customer supplied computers shall be installed, one at each operations area slide-out workstation.

PRINTER

Install customer supplied HP 2600DN or equal printer in Dispatch area on rear curbside printer cabinet.

PUBLIC ADDRESS SYSTEM

A public address system shall be provided that operates through specified phome PBX intercom system and has exterior body speaker(s). Any required amplifier or switches shall be located in specified data rack with phone system.

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 used in the construction of the apparatus shall be provided with the completed apparatus.

WHEEL CHOCKS

There shall be two (2) NFPA approved folding aluminum wheel chocks provided for 44" diameter tires.

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

FLASHLIGHTS

Two (2) Streamlight #SL-20XP rechargeable flashlight(s) and charger(s) shall be provided. Each flashlight shall be orange in color. Each flashlight shall have a DC charger and storage sleeve.

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

PORTABLE ELECTRIC CABLE REEL

Two (2) Hannay model CR16-10-11 portable cable reel(s) with 100' of 12/3 SO black electrical cable shall be provided with the completed unit. Location of the reel shall be determined by the Maui Police Department at the pre-construction meeting.