



STATE OF CALIFORNIA  
Department of General Services - Office of Procurement

Purchase Order No. Rev. Date  
62012 5/ 8/2008

**PURCHASE ORDER**

Form GSOP 1-PIN (04/98)

Supplier No.	Solicitation No.	Delivery Date	FOB Point	Invoice Terms
439407	56751	210 Days ARC	Destination	

LEADER INDUSTRIES INC 10941 WEAVER AVENUE SOUTH EL MONTE, CA 91733 Attn: BOB HUMPHREY  Phone: 661-297-5993	<b>S</b> CA STATE PRISON - LAC <b>h</b> MEDICAL DEPT <b>T</b> <b>i</b> 44750 60TH STREET WEST <b>o</b> <b>P</b> LANCASTER, CA 93536 Attn: SUPPORT WAREHOUSE GARAGE	<b>C</b> CORRECTIONS <b>h</b> REG ACCOUNTING OFFICE <b>a</b> PO BOX 12050 <b>T</b> BAKERSFIELD, CA 93389 <b>r</b> <b>o</b> <b>g</b> <b>e</b>	
	<b>Agency Billing</b> 17247	<b>Agency Purchase Estimate</b> 3275-7001	<b>Purchase Estimate</b> 66985 <b>Revision</b> 0
	<b>Agency Contact</b> DAVID ARANZUBIA X5233	<b>Phone</b> 661-729-6960	<b>Date Received</b>

Item No.	Quantity	Unit	Commodity Code	Description	Unit Price	Extension
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THE GENERAL PROVISIONS FOR NON-IT COMMODITIES ARE HEREBY INCORPORATED BY REFERENCE. THESE GENERAL PROVISIONS CAN BE OBTAINED BY PHONING (916) 375-4400 OR BY ACCESSING OUR WEBSITE AT:

[www.documents.dgs.ca.gov/pd/modellang/GPnonIT0407.pdf](http://www.documents.dgs.ca.gov/pd/modellang/GPnonIT0407.pdf)

THE FOLLOWING INFORMATION IS PROVIDED FOR AGENCY USE ONLY:

PRIME CONTRACTOR: NS  
FY 2007/2008

FOR THE PURPOSE OF THIS AWARD, ONLY F.O.B. Destination will be accepted.

This Purchase order has been registered into the state contact and procurement registration system (<https://www.scprs.dgs.ca.gov/>). The registration number is: 52400508302732

1	1	EA	2310-515-3100-9	AMBULANCE TYPE II AMBULANCE IN ACCORDANCE WITH ATTACHED BID SPECIFICATION #2310-08BS-001	60,386.9500	60,386.95
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Total Value: 60,386.95

CHANGE ORDERS:

Any Purchase Order resulting from this bid may be amended, modified, or terminated at any time by mutual agreement of the parties in writing. Change orders amending, modifying or terminating the Purchase Order, including any modifications of the compensation payable, may be issued only by the State Procurement Officer. All such change orders shall be in writing and issued only upon written concurrence of the supplier. Termination, as that term is used in this section, does not include termination for default of the supplier.

Sales and/or use tax to be extra unless noted above

Buyer  EVONNE ROGERS	Phone 916-375-4346	BOC Number
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**STATE OF CALIFORNIA  
Bid Specification**

**Type II Ambulance  
California Department of Corrections and Rehabilitation**

**1.0 SCOPE**

This specification establishes the minimum requirements for a 2007 or current production year, rear wheel drive long wheelbase Van Type II Ambulance. The unit shall be delivered as a "turn-key" product, and fully functional.

Intended use: The vehicle will be used by the California Department of Corrections and Rehabilitation (Lancaster), on and off grounds, for the transport of inmates in need of medical attention. Destinations will include hospitals and medical facilities throughout California. The unit offered must comply with all codes and regulations governing the manufacture and use as an ambulance.

**2.0 SPECIFICATIONS AND STANDARDS**

Units offered shall comply with all Federal and State regulations in effect at the time of bid opening and at the time of manufacture. All performance requirements listed in this specification are established as minimums unless otherwise noted. Units offered shall comply with applicable sections of the Federal Specification for the Star-of-Life ambulance, #KKK-A-1822F.

When listed, reference brands are specified to describe a minimum requirement. Manufacturers offering products comparable to the reference products will be acceptable. The State may require justification from the supplier to verify comparability.

**3.0 REQUIREMENTS**

**3.1 Safety:** Each vehicle delivered shall conform to the Federal Motor Vehicle Safety Standards (FMVSS) and the California Vehicle Code (CVC) requirements for emergency vehicles in effect as of the date of manufacture.

**3.2 Emission Control:** Vehicles shall meet or exceed current emission requirements for emergency vehicles as established by the California Air Resources Board (CARB) as of the date of bid opening.

**4.0 CHASSIS FOR TYPE II AMBULANCE**

**4.1 Dimensions and Weights:**

1. A minimum of 138 inch to a maximum of 155 inch wheelbase
2. A minimum 9201 lb and 10,000 lb Gross Vehicle Weight Rating (GVWR)

- 4.2 Overall Length:** The over all length of the vehicle shall not exceed 22 feet (264") per Federal Specification KKK-A-1822F 3.4.10.1. The departure angle shall not exceed KKK-A-1822F 3.4.10.4.
- 4.3 Interior Dimensions:**
- Height:** The patient compartment shall provide at least 64 inches height over the primary patient area, measured from the floor to the ceiling panels.
- **Aisle:** The compartment shall provide a minimum of 12 inches of clear aisle walkway between the edge of the primary patient cot and the base of the nearest vertical feature measured along the floor.
- 4.4 Engine:** A V-8, turbo-charged, diesel engine shall be provided with a minimum displacement of 6.0 liters . The engine shall be equipped with a two-stage, dual element air filtration system, engine block heater with switch and engine oil cooler integral with engine. The engine performance shall comply with or exceed KKK-A-1822F 3.4.3 thru 3.4.9.
- 4.5 Ambulance Top:** The top shall be a one-piece, hand laid up reinforced fiberglass roof with special wide ribbed center sections molded into panels for added strength. The front section shall step down and be sufficiently low to allow a light bar to be installed which shall not exceed the height of the upper roof. There shall be a "cage" of tubular steel with sections running the entire length and width of the ambulance and welded to the upper body frame. There shall be a roll bar over the driver's compartment. Two (2) vertical (square tubes) shall be welded to become an integral part of the roof "cage". One shall be just behind the curbside access door and one shall be just behind the wheel on the street side. All portions of this frame shall be covered in rust inhibitor. This frame shall be "sandwiched" between the exterior roof and the liner fiberglass headliner. The ambulance top and one-piece fiberglass inner liner shall be 100% manufactured and shall have a written five (5) year warranty (notarized by an officer of the manufacturer) and submitted with the bid. There shall be an antenna ground plane added to the roof to ensure adequate radio reception. This plane shall be grounded to the vehicle chassis. The ground plane shall cover 41 square feet of roof providing maximum access to ground material. Wires attached to the ground plane must be soldered to the ground plane.
- 4.6 Insulation:** Complete sidewalls and roof will be insulated with two layers of air cell type insulation with foil backing, sandwiched between the inner liner and exterior roof. The environmental floor barrier shall be installed prior to patient area sub-floor attachment.
- 4.7 Rear Headliner:** Shall be one piece hand-laid-up fiberglass with removable center panel for access to the wiring in the patient area.
- 4.8 Cooling System:** The supplier shall furnish a heavy duty cooling system specifically designed to handle the load requirements of the vehicle, equipped with the options specified herein. A coolant recovery system shall be furnished. The cooling system shall provide protection from ambient temperatures ranging from 0°F to 110°F.
- 4.9 Electrical Equipment:** The supplier shall furnish a 12-volt electrical system specifically designed to handle the load requirements of the vehicle, equipped with the options specified herein.

- 4.10 Transmission/Driveline:** Each vehicle shall be equipped with the manufacturer's standard automatic-overdrive type transmission providing not less than five (5) forward speeds and one (1) reverse speed, and shall include the manufacturer's heaviest duty transmission fluid cooler per KKK-A-1822F 3.6.5.2.
- 4.11 Steering:** Each vehicle shall have the manufacturer's standard power-assisted steering.
- 4.12 Brakes:** Each vehicle shall be equipped with the OEM manufacturer's standard power assisted hydraulic service brakes and when available from the manufacturer shall include a four wheel, electronic anti-lock brake (ABS) system. The parking brake shall be an independent mechanical brake, provided by the O.E.M.
- 4.13 Wheels and Tires:** Each vehicle shall be equipped with the OEM's standard tubeless type steel belted radial tires mounted on OEM approved rims rated for GVWR specified. Tires shall be the OEM's recommended tread design for the type vehicle ordered. As a minimum, all tires shall be the all-season tread design and labeled for Mud and Snow (M/S) service. All primary tires and wheels shall be identical (i.e., no cross brands or models). All tires and wheels shall be balanced per KKK-A-1822F 3.6.10. Wheels shall be painted white to match the vehicle color.
- 4.14 Spare Tire:** One (1) spare tire and wheel assembly shall be supplied and mounted under the chassis. Wheel shall match other four (4) wheels.
- 4.15 Axles/Springs/Frame:** Rear axle shall be heavy duty with limited slip differential, ratio as close to 3.55 as available to maintain a 65 mph road speed (70 MPH passing speed). Heavy duty gas type shock absorbers, front and rear, and front and rear stabilizer bars shall be included. Springs and frame shall be as required for the GVWR. The axles, springs and frame shall be O.E.M. approved for this application.
- 4.16 Fuel Tank:** The vehicle shall be equipped with a maximum OEM size fuel tank available for a Type II ambulance that will comply with the fuel range as required by KKK-A-1822F, Section 3.4.8.
- 4.17 Heating/Air Conditioning:** Each vehicle shall be equipped with the manufacturer's heavy duty, factory installed, and CFC free, dehumidifying, all weather air-conditioner. The air conditioning system shall include, but shall not be limited to, necessary insulation, increased engine cooling capacity, including recovery system, plus increased alternator and battery capacity. There shall be Six (6) omni directional heating/cooling vents in patient compartment. Note: The completed vehicle shall comply with KKK-A-1822F, section 3.13.2 -3.13.5.
- 4.18 Van:** Van shall be equipped with driver and passenger power door windows and power door locks. All exterior doors shall also be actuated by power door locks. O.E.M. high back, cloth covered bucket type seats shall be provided. The driver and passenger seat positions shall adjust forward and aft. Seat base must be O.E.M.
- 4.19 Exterior Color:** The exterior color shall be the manufacturer's standard white color.

- 4.20 Ambulance Preparation Package:** The vehicle provided shall be equipped with OEM optional ambulance preparation package. The package shall be designed to hold up to the demands and duty cycles inherent with Emergency Medical Vehicles.
- 4.21 Map Box/Console:** There shall be a custom map box covered in matching Formica® installed against the back wall of the cab area between the driver's and passenger's seats. The Map Box/Console shall be constructed and finished in the same materials as the other cabinets described. The console shall be fitted to the engine console and provide storage for maps and charting materials.
- 4.22 Throttle High Idle:** The OEM Engine High Idle speed control shall be furnished. The OEM Engine High Idle speed control shall meet all requirements of Federal Standard KKK-A-1822F.
- 4.23 Reverse Alarm:** An audible alarm shall be installed to activate when the vehicle is placed into reverse gear. A momentary cutoff switch to disable this alarm shall be installed on the front console. This switch shall automatically reset each time the vehicle is placed into reverse gear.
- 4.24 Miscellaneous Equipment:** The following items, supplementing if necessary those items already cataloged as standard equipment, shall be furnished and in place.
- Seat belts for all seating positions.
  - Sun visors for both driver and passenger positions.
  - Dome light(s) with door activated switches.
  - Inside hood release.
  - OEM's standard AM/FM/CD radio with antenna and speakers.
  - Intermittent, multi-speed windshield wipers with washers.
  - Tilt steering wheel.
  - Dual O.E.M. power adjusted heated mirrors. Outside rear view mirrors shall comply with KKK-A-1822F 3.9.5.
  - Standard tool kit including wheel-changing tools and jack, adequate to safely lift the vehicle when loaded to rated capacity.
  - 12-Volt DC interior/dash and patient compartment power outlet.
  - 110 VAC out-let in patient compartment.
  - 110 VAC Shore Line System - location to be on the exterior, just back of the driver's side exterior door.
  - Cruise Control
  - Rubber on floor cab
  - Tinted glass
  - Dual electric horns
  - ICC marker lights
  - Front license plate bracket
  - Factory gauges for oil pressure, fuel capacity and water temperature.
  - Two (2) 6 inch communication speakers located in the overhead driver's compartment.
  - OEM rear view mirrors with convex wide angle view.
  - Fire Extinguisher: One (5) five-pound A-B-C type fire extinguisher with mounting brackets shall be supplied loose with the vehicle upon delivery.

## 5.0 FLOOR CONSTRUCTION:

- 5.1 **Floor:** The floor shall be at the lowest level permitted by the chassis body, but not more than 33" from the ground. No more than two (2) seams are permitted, both of which shall run the length of the vehicle. One may be under the squad bench and one may be under the wall cabinet. There shall be a minimum of pockets or voids at the floor to the sidewall areas where water or moisture can become trapped or cause unsanitary conditions. All voids and pockets shall be filled with a sealer or caulking compound to provide a smooth finish from wall to wall. The floor bottom shall be completely sealed to prevent moisture and toxic fume penetration. Flooring must be made of no less than ¾" marine grade plywood.
- 5.2 **Floor Covering:** The floor covering shall be of heavy duty Tarkett® brand (or equivalent), grey in color. This covering will be smooth and able to withstand a smooth 90° bend from floor to sidewalls. The floor color shall be impregnated throughout the floor material. Flooring will extend 3" up the sidewalls of the wall cabinet and squad bench. The flooring shall be sealed in a manner to prevent water seepage. Floor covering shall be trimmed with metallic trim. The rear door entrance shall have a stainless steel angled and flush mounted threshold piece. This piece is designed for an angled ramp for cot loading assistance and shall be cut to the contour of the areas it covers.

## 6.0 DOOR OPENING AND CONSTRUCTION:

- 6.1 **Side Opening:** There shall be a door opening on the right forward side of the body for loading a patient on a cot. The side opening shall have a double hinged door. The door opening dimensions shall be standard OEM for Type II ambulances.
- 6.2 **Rear Opening:** There shall be a door opening at the rear of the body for loading a patient on a cot. The dimensions shall be the OEM's standard rear door width opening for Type II Ambulances.
- 6.3 **Safety Glass:** All ambulance body doors shall be equipped with not less than 250 square inches of safety glass area per door.
- 6.4 A reflective device shall be furnished in any color meeting the reflector or conspicuity systems requirements of FMVSS 108 and:
- Have at least 60 Square inches of total reflective area.
  - Shall be installed on the interior of all patient compartment entry doors.
  - The reflective device shall be so positioned as to provide maximum visibility when the doors are in the open position.
- 6.5 **Door Open Indicator:** There shall be a "Door Open" warning light in the overhead console switch panel, this shall be a one inch (1") (approximately) red flashing jeweled light and identified by an etched plastic label.
- 6.6 **Door Hinge:** The right and left hand front doors, curb side patient loading doors and back loading doors shall be double hinged. The hinges shall meet FMVSS 206. When the door is open, the hinges shall not protrude into the access area.

6.7 **Door Opening and Locking Methods:** All patient area access doors shall have power door locks. There shall be special override switch in the grille area. This override switch shall always be hot. Door locks shall be OEM installed. The two (2) back doors and the curbside door shall be secured in the open position by Cast Products, "Grabber model C-10870-1 male/female door holding device" or equivalent.

## 7.0 BODY PROTECTION

7.1 **Bumpers:** The front and rear bumper shall meet KKK-A-1822F 3.9.6. OEM's standard bumper shall be furnished in the front of the chassis. The rear bumper shall be full width with a step secured to the vehicle's chassis-frame. The bumper step shall be designed to prevent the accumulation of mud, ice, or snow and made of anti-skid open grating metal. All steps must be at least the width of the door opening for which they are provided and shall be powder coated.

7.2 **Rear Access Door Jamb:** At the rear access doors, a full width, formed, stainless steel jamb protection plate shall be provided to prevent the cot frames from chipping the paint. The stainless steel protection package shall start from under the kick plate and follow the contour of the jamb extrusion, cover the end of the sub-floor and cover the last four inches of the vinyl floor covering.

7.3 **Curbside Access Door Jamb:** At the curbside, module entry door, a full width, formed, stainless steel jamb protection plate shall be provided to prevent heavy traffic from chipping the paint.

## 8.0 INTERIOR CABINETS AND COMPONENTS:

8.1 **Wall Cabinets/Compartments:** All cabinets shall be constructed of 3/4" Marine grade plywood. The exterior surfaces not covered by rubber material shall be covered by two-tone (dark grey matte finish on lower areas, light grey gloss upper areas. The interior of all cabinet surfaces not covered by rubber material shall be covered by a white Formica type laminate. The top horizontal cabinets shall have sliding plexiglass windows. The outside vertical edge of the plexiglass shall have full length aluminum, extruded pull handles. Each window shall be framed and mitered, with extruded aluminum window frames. The area forward shall contain the rear electrical controls for the dual Puritan-Bennett Ohio (or equivalent) compatible oxygen outlets. At the floor level just in front of the attendant's seat shall be a compartment for the suction pump. It shall have a solid wood, flush fit, lift-off door. At the forward end of the wall cabinet, just above the attendant's seat shall be two (2) additional compartments covered by sliding plexiglass windows.

8.2 **Right Front Cabinet:** The right front cabinet is hereinafter known as "ALS cabinet". The ALS cabinet shall be finished in color-keyed mica. All shelves shall have a lip to preclude items from falling off the shelf in transit.

8.3 **Action Area Cabinets:** Two cabinets shall be located above the action area for storage of medical tubing, airways, and ventilation facemasks

8.4 **Enclosed Drug Cabinet:** A drug storage cabinet shall be fabricated and installed within an interior cabinet and shall be equipped with a lock keyed unlike others used on the vehicle. Location shall be determined at the Pre-Construction conference.

- 8.5 Emergency Medical Services Provider (EMSP) Seating:** The EMSP shall be provided with a seat conforming to Federal Motor Vehicle Safety Standards (FMVSS) and KKK-A-1822F. The seating shall be equipped with an OEM install safety belt and a padded back and a padded headrest. The seat shall not be less than 15" deep and 18" wide and a minimum distance of 43" from the top of the padded seat to any overhead obstruction. The EMSP seat shall be located to allow for the care of the primary patient. The lower area of the seat shall be a drawer system or storage box.
- 8.6 "On Board" Oxygen System:** Three (3) Puritan Bennett, Ohio (or equivalent) compatible flush mounted wall outlet at the attendant control center shall be provided. The flow meters and pre-set bottle regulators shall be included. The oxygen system shall meet federal standard KKK-A-1822F 3.12 and 3.12.1. Final location of oxygen system hardware shall be determined at the preconstruction conference.
- 8.7 Oxygen Storage:** The main oxygen cylinder ("M" Size) shall be stored transversely in a horizontal cabinet. An O2 wrench shall be included and chained to the interior.
- 8.8 Vacuum (Suction) System:** A 12-Volt, "SSCOR" (or equivalent) suction container with "Thomas" suction pump mounted under the attendant seat base. A variable vacuum regulator and gauge panel shall be installed in the action area control panel. The vacuum regulator shall vary vacuum delivered to a 1200 cubic centimeter collection jar. The vacuum gauge shall not be mounted on the collection jar itself. The pump shall meet performance guidelines set forth by federal specification KKK-A-1822F 3.12.2.
- 8.9 Partition:** The partition shall be a partial crawl-through type, from the top of the transverse "M" compartment to the bottom of the rear air conditioning cabinet. There shall be a flush fit, partition door with sliding window, vertically hinged on the curbside of the partition opening into the patient compartment. There shall be a transverse, scoop storage compartment constructed of aluminum. It shall be 3.5" in width (I.D.) and be located between the cab seat and the front portion of the partition. It shall also be capable of storing a scoop stretcher or similarly sized item. The cab side of the partition wall shall be covered in matching Formica.
- 8.10 Restocking Timer:** There shall be a "5" minute Dayton (or equivalent) timer mounted on the curbside, above the squad bench cushion.
- 8.11 Squad Bench Curb Side:** A squad bench shall be installed. Two point seat belts shall be supplied. The belts shall restrain seated occupants or one secondary patient, on a backboard. All seat belts and anchorage shall comply with F.M.V.S.S. 209 and 210. The squad Bench shall comply with KKK-A-1822F 3.11.4. A back and headrest shall be supplied for all seated personnel along the squad bench. All seating positions in the patient compartment shall be provided with a vertical overhead clearance measurement of 43 inches
- 8.12 Squad Bench Storage:** A storage area shall be installed beneath the squad bench cushions. Access to this area shall be gained by raising the bench lid. Gas piston style hold-open devices shall be installed on the flip-up squad bench cushions. Latches shall be installed on the bench cushion to hold the cushions in the closed position. Each latch shall be installed in the center of the cushion just below the padded outer surface and shall flip upwards to release. There shall be additional storage areas available forward and aft of the wheel well. These areas shall be accessible under the squad bench cushions and in the rear area via a vertical slot in the wood partition of the back of the squad bench.

**8.13 Trash Compartment/Sharps Receptacle:** A trash receptacle compartment, with closure over opening, for general waste shall be furnished which includes a plastic/rubber trash can and disposable plastic liners. The trash compartment shall be accessible to the EMT seat and to the head of the squad bench. A sharps receptacle compartment/storage or a commercially available container for retention of sharps that meets OSHA requirements, mounted in a convenient area, shall be furnished.

## 9.0 INTERIOR HARDWARE

**9.1 Curbside Recessed Overhead Assist Rail:** This rail shall be naturally accessible to assist working attendants in maintaining their balance. The rail shall exceed federal specification KKK-A-1822F 3.15.2.3. The stainless steel rail shall be a maximum of 4" depth, and minimum 60" long on the ceiling over the primary patient. Grab rails that utilize separate, setscrew rail fittings are not acceptable.

**9.2 Primary Cot Mount:** The main cot mount shall be a dual position, Stryker model No 6370 or equal. The antlers and release bar shall be detachable via thumbscrews. Flooring material shall be used inside the floor plate cut out to seal otherwise exposed plywood surfaces inside the key hole slot and threaded hole in each cot mount plate.

**9.3 IV Hooks:** One ceiling mounted "Hook" style device specifically designed for holding IV containers shall be provided, including Velcro type straps to adequately secure an IV bag/bottle. The device shall not protrude more than 1", and shall be located adjacent to, or on the cabinetry near the head of the primary patient. The IV hanger shall meet federal specification KKK-A-1822E, 3.11.7.

**9.4 Patient Area Radio Speakers:** Two (2) speakers shall be installed in the patient area over the rear doors. The speakers shall include a volume switch that is integral to the rear action area switch panel. The volume shall be controlled by individual up/down switches.

## 10.0 UPHOLSTERY

**10.1 Upholstery Materials:** All padding and upholstered seating shall be covered in vinyl. Sewn seams in the seat covers and cushions shall be minimized. The squad bench shall include a one piece seamless cushion and a seamless backrest. Final color selection shall be determined at the preconstruction conference. The upholstery color shall be grey.

**10.2 Seat/Backrest Core Material:** The foam shall meet Federal Specification KKK-A-1822F 3.11.4. Seat cushions shall be ergonomically contoured to fit 95 percentile of adults. All core material shall be open cell, high resilience, Qualux foam or equal.

## 11.0 OVERHEAD SWING-DOWN CONSOLE & CONTROL CENTER:

**11.1** The cab control panel multiplex switching system shall be located in the swing-down console & control center located in the overhead cab headliner. The driver's compartment ceiling shall be laminated plywood and hand laid up, one-piece fiberglass. It shall be a "swing down" design with full length stainless steel, piano hinge, located on the backside to enable the entire front head-liner console to swing down and rest on the driver and passenger seat. It shall have an angled and indented area facing the driver

for easy viewing and access to the controls. Two (2) indented, overhead areas shall be present for two (2), two-way radio speakers to be installed. Access to this compartment via for (4) bolts welded in place and four (4) detachable acorn nuts. On the reverse side of this compartment shall be all auto resetting circuit breakers, relays, flashers, and other electrical control items. This compartment must be capable of be detached from the vehicle for purposes of bench testing the console and internal components. The console shall contain all switches, door open indicator, siren, map lights, and one (1), two way radio head. There shall be a minimum of 38 vertical inches from the forward top of the driver and passenger seat to the lowest part of the driver's compartment ceiling. At the rear of the top seat, the vertical distance shall be at least 40 inches.

**11.2 Switches in Overhead mounted Console:** All switches shall be Euro style and disconnect switch is also required.

**12.0 REAR AIR CONDITIONING CONTROLS:**

**12.1** A three-way ON/OFF switch shall be located in the action area and the cab console. The aforementioned switches shall not control fan speed. A separate three-speed fan speed control switch shall be located in the action area control panel.

**13.0 ELECTRICAL SYSTEM – 12-Volt General**

**13.1 Alternator:** Two High Output/Heavy Duty 110 Amp standard OEM alternators.

**13.2 Quad Battery System:** Heavy duty 12 Volt, high reserve capacity 90 amp hour. Shall have an on/off ignition controlled switch for starting battery operation. The four batteries shall be located in a fabricated aluminum container with slide out tray. This compartment shall be treated with a corrosion inhibitor.

- Two (2) shall be starting batteries functioning in a reserve capacity to start the vehicle.
- A switch shall be provided in the console to tie the battery(s) together for emergency start purposes. Each system shall be able to be monitored by a common volt meter. If the system for emergency purposes is tied together, a warning light shall be activated in the over-head console.

**13.3 12-Volt Wire:** All wires within the ambulance harnesses shall meet federal specification KKK-A-1822F 3.7.2 and 3.7.2.1. Permanent wire identification and wire function shall be printed along the full length of the wire. Wire conductors shall be stranded copper. All wire harnesses shall be clamped and routed to eliminate possibility of damage due to cut/chaffed wire. Grommets made of rubber or plastic shall be used where wire passes through metal or wood. Large holes and irregular shaped wire passages shall use automotive edge trim to protect the wire conduit/loom. Wire harnesses shall be neatly clamped into protective routing areas away from heat sources, unfriendly edges or moving devices.

**13.4 12-Volt Outlets:** Two (2) 12 volt, direct current, 20 Ampere, Cigar Lighter Style shall be provided and mounted in the action area. Each outlet shall be separately protected and shall be electrically isolated from other electrical functions on the vehicle. The outlets shall be wired per federal specification KKK-A-1822F 3.7.7.3.

- 13.5 Charger/Inverter:** Pre-wired for Vanner 20-1050 or equal. Wiring for Charger/Inverter shall be connected to the Shoreline.
- 13.6 Grounding:** Dedicated grounds for all appliances, circuits, etc. shall be furnished. The use of appliance mounting screws/hardware shall not be used for grounding purposes unless specifically designed for such use by the appliance manufacturer. All grounding must comply with federal specification KKK-A-1822F 3.7.3. Conventional stranded copper cables are not acceptable because they do not meet SAE J551.
- 13.7 General Grounds:** All devices wired within the ambulance conversion shall be centrally grounded and comply with federal specification KKK-A-1822F 3.7.3., 3.7.3.1., and 3.7.8.5. Each device shall have a separate ground wire routed to a central buss bar then grounded via fine strand cable to the module body. Local grounds are acceptable only when the device is drawing at or less than 100 milliamps (0.1 amps).
- 13.8 Multiplex Switching System:** The electrical system shall utilize membrane multiplex switching combined with electro-mechanical circuit breakers and relays.
- 13.9 Circuit Breakers:** All conversion 12-Volt circuits shall be protected by non-proprietary, automatic reset, pole breakers. The trip value for the breaker shall not exceed 80% of the amperage rating of the weakest component in the circuit. Branch circuit wire sizes shall be rated 125% of the expected load per KKK-A-1822F 3.7.2.1.
- 14.0 110-VOLT SYSTEM**
- 14.1 Primary Shoreline Inlet:** A 110-volt, fifteen amp (15A) straight blade, male shore line inlet shall be mounted on the exterior of the ambulance by the driver's door. This inlet shall supply power to all 110-volt outlets, including the engine block heater, shall be grounded to keep continuity with the buildings G.F.I. breaker, shall have a spring-loaded, weatherproof cover, and shall be designed so that the plug will automatically eject in the event that the vehicle is started while it is still plugged in. An engraved placard or permanent vinyl label, stating voltage and amperage shall be located over the inlet.
- 14.2 110-Volt Interior Outlets:** Two (2) duplex 110 Volt, Hospital grade, straight blade outlet shall be provided: one (1) located in the action area and one (1) located on the curb side wall at the foot of the squad bench. The outlets must be grounded and protected by a G.F.I. (Ground Fault Interrupted) Breaker. Additionally the outlet bodies must illuminate when power is applied to the outlets
- 15.0 INTERIOR LIGHTING**
- 15.2 Patient Cabin Dome Lights:** The patient cabin shall have six (6) dome lights in the ceiling (Weldon model 8046, or equal). The dome centers shall be aligned along two light banks. The left bank shall provide light directly over the patient; the right bank shall provide light directly over the aisle/squad bench. A 3-way switch(s) in the patient area shall control the patient area dome lights. The dome lights and configuration shall meet KKK-A-1822F 3.8.4.1.
- 15.3 Action Area Lighting:** A 12-volt fluorescent light (near flush, 12-inch Thin-lite type fixture) shall be provided directly over the forward, street side work surface. The light shall have an on-off rocker switch on the body of the light housing.

- 15.4 **Step Well Illumination:** An interior light shall illuminate the side step well per federal specification KKK-A-1822F 3.10.12.
- 15.5 **Patient Cabin Fluorescent Lights:** Two (2) semi-recessed fluorescent lights shall be installed in the center pad (12-Volt Thinline #716 or equal). A cutoff switch located in the action area panel shall be installed in addition to the switch located on the end of the light fixture. A 115 VAC to 12 VDC converter shall be supplied to power the lights with the shoreline system.
- 16.0 **EXTERIOR LIGHTING AND PUBLIC ADDRESS (Visual)**
- 16.1 **Warning Lights:** The warning light system shall meet or exceed KKK-A-1822F. A Whelen, model AF-6016 flasher (or equal) shall be provided for halogen warning lights. The warning lights shall flash to federal standard KKK-A-1822F. All main warning lights shall be at least 7" high by 9" wide. The headlight flasher switch shall be located in the overhead console.
- Halogen light heads shall be provided as follows:
- (4) Side facing Whelen 900 (or equal) – Red
  - (2) Rear facing, high mount, Whelen 900 (or equal) – Red
  - (2) Rear Window Level, Whelen 900 (or equal) - Amber
  - (1) Center Rear Whelen 600 (or equal)– Amber
  - (2) Front intersection Whelen 700 (or equal)– Red
  - (2) Grille Whelen 700 (or equal)- Red
- 16.2 **Front Light Bar:** The front light bar shall be a Whelen Edge+Plus 4500 series (or equal). The bar shall accommodate up to nine devices configured as follows: red rotator / flashing red halogen / red super LED / clear strobe / steady red halogen / clear strobe / red super LED / flashing red halogen / red rotator.
- 16.3 **Third Brake Light:** A third brake light shall be located centered above the rear access doors. The light/lens shall measure at least 7.5 square inches and come on only when the brake is applied. (Sierra Model 403BE2-7C77 or equal)
- 16.4 **I.C.C. Lights:** Clearance lights shall be provided per FMVSS and D.O.T. standards. The lights shall illuminate the height of the vehicle, the width and define the vehicle centerline.
- 16.5 **Tag Light:** The tag area shall be illuminated with the park light circuit.
- 16.6 **Scene Lights:** Four (4) scene lights with 13-degree downward illumination shall be provided; two scene lights shall be mounted on each side of the module (Whelen 900 or equal). The right side lights shall come on when the curbside entry door is opened. All lights shall come on with (2) two separate, right and left scene switches located in the cab console.
- 16.7 **Load Lights:** Two load lights shall illuminate the rear of the module with 26-degree downward illumination (Whelen 900 or equal). Both lights shall come on when the rear access door is opened, when the vehicle is placed into reverse gear or with the switch in the cab console.

- 16.8 Hand Held Spot Light:** A hand held 100,000-candle power, blue eye spotlight shall be provided in the cab. Additionally, a chromed hook with spring retainer shall be included to stow the light.
- 17.0 PUBLIC ADDRESS / SIREN (AUDIBLE):**
- 17.1** A combination electronic siren with integral public address system including radio interface capability shall be provided. The siren shall be a 100-watt, Whelen 295-HFS siren (or equal). The siren speakers shall not block airflow into the grille. The speakers shall have 100-watt drivers and shall emit sound directly from the speaker horn. The speakers shall be installed in the O.E.M. tow eye recess area in the front bumper. The siren shall be capable of producing a continuous warning sound at a minimum level of 123 db, A-weighted, at 10'. The siren and speakers shall meet or exceed KKK-A-1822F and California Title 13 requirements.
- 18.0 COMMUNICATIONS**
- 18.1 Antenna Cable and Access:** The FSAM shall provide each ambulance with a ground plane, and coaxial lead-in wire from the ventilated radio storage area/compartment to the centerline of the patient compartment roof. An antenna wiring access/port shall be provided in the patient's compartment directly under the coaxial leads. The port shall provide at least 16 square inches clear access. All non-metallic roofs will be equipped with at least a 40" x 40" metal ground plane molded into the roof. The ground plane then shall be properly grounded to the chassis ground. The antenna cable (lead-in) shall be provided and clearly labeled with RG/58U or equal cable. Approximately 18" of extra cable shall be provided at the roof and approximately 36" at/in the radio area/compartment. All communications shall comply with federal standard KKK-A-1822F 3.14.1 through 3.14.4.