



**ATTACHMENT 1 TO TERMS AND CONDITIONS  
FOR IFB# 08-09-07 AMBULANCE  
BID SPECIFICATIONS**

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**Bidder shall indicate below that product (Dealer Specifications) meets City specifications as described below. Bidder shall explain any dealer specification that does not meet City specifications.**

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY  
BODY**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

**CAB & CHASSIS**

**CAB & CHASSIS**

12,300 # GVWR

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Wheelbase: 139"

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**DIESEL ENGINE**

**DIESEL ENGINE**

(8) cylinder turbo diesel; engine oil cooler

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Engine being offered (please state name, etc.)

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250hp @ 3200rpm, 460lb-ft of torque @ 1600 rpm

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Engine to meet all current 2007

Federal Emission Standards

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**Provide documentation indicating that the engine being supplied is in full compliance with all current Federal Emission standards**

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**ENGINE ELECTRONICS**

**ENGINE ELECTRONICS**

Engine RPM control – remote mounted; provisions for wiring for body builder installation of PTO controls with ignition switch controls for electronic engines

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

High idle switch

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Key operated engine shut-down

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Cold starting equipment with engine ECM control

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Block heater with accessible plug for electric cord connection; Auxiliary heat generator, fuel operated; Supplemental heat source to cooling system to Improve heat output for HVAC

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**ENGINE COOLING SYSTEM**

**ENGINE COOLING SYSTEM**

Radiator: Manufacturer standard louvered; air cooler

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Anti-freeze "fill-for-life" type; Penray listed

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Radiator hoses: silicone; molded

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**TRANSMISSION**

**TRANSMISSION**

Four (4) speed Heavy duty electronically controlled with overdrive; on/off highway; oil level sensor

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External oil cooler

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Brake/Transmission shift interlock

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Dash mounted shift controls

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Oil level sensor

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Synthetic transmission fluid

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Transmission/engine electronic interface

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Oil pan magnet in transmission oil pan

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

**AXLES & SUSPENSIONS**

**AXLES & SUSPENSIONS**

**Front:**

**Front:**

4,100 # capacity, manufacturer standard front axle

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Independent front suspension with coil springs  
and stabilizer bar

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Wheel bearing seals with sight glass and  
synthetic lubricant

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**Rear:**

**Rear:**

6,084 # capacity manufacturer standard rear axle

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Gear ratio: 3.73

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Rear hypoid drive axle with multi-leaf springs

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Heavy duty locking rear differential

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Rear wheel drive

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**CHASSIS BRAKE SYSTEM**

**CHASSIS BRAKE SYSTEM**

Four (4) wheel; antilock; disc brakes

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**ELECTRICAL SYSTEM**

**ELECTRICAL SYSTEM**

12 volt system with dual (2) 145 amp capacity  
alternators

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(2) – 12 volt maintenance-free batteries; run down  
protection and retained accessory power; 770 CC

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

each

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Remote mounted jump start stud

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2 auxiliary 12-volt power outlets on engine console with covers

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Dual note horn; high/low

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102 DBA back-up alarm

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Power door locks and windows; door locks to have lockout protection

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Theft deterrent security system shall be installed in the vehicle with a 3 position switch located on the dash to the right of the steering column. The first position shall allow for key removal with the vehicle running. The second position shall be the off position. The third position shall allow for key Removal with the vehicle running and activate the OEM horn if there is an attempt to put the vehicle in gear.

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Dual composite halogen headlights

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Interior lighting with dome light and door activated switches

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Daytime running lights

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Heavy duty turn signal flasher compatible with LED chassis provision

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Air bag frontal; driver and front passenger

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Battery disconnect switch; positive type; lever operated – NO KEY; mounted on cab floor – driver’s side

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Intermittent windshield wet-arm with pulse washers

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SAE Type III circuit breakers (manual reset)

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

AM/FM stereo radio/CD player with speakers,  
weather band and clock

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2-way radio wiring with 20 amp fuse protection  
including ignition wire with 5 amp fuse,  
heat shrunk wire ends, and 10' of wire –  
coiled and taped to base harness

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Wiring for body company located at rear of cab at  
left frame to include sealed connectors for Tail,  
Amber Turn, Marker, ABS,  
Accessory Power, Ground

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Modified tail light wiring to include wiring for standard  
L & R tail lights with separate 8' lengths of extra  
cable wiring for L & R body mounted tail lights

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Battery disconnect AMBER LED indicator light;  
grille mounted vertical

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Auxiliary HVAC system provisions

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**STEERING GEAR**

**STEERING GEAR**

Power steering

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Tilting steering column with cruise control

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**FUEL TANK**

**FUEL TANK**

Capacity: 57 gallons

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Location: right side; under cab mount

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Fuel/water separator with thermostatic fuel temperature  
controlled electric heater and fuel filter with filter  
restriction/change indicator in a single assembly –  
mounted on engine

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**EXHAUST SYSTEM**

**EXHAUST SYSTEM**

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Aluminized stainless steel muffler and tailpipe

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Exhaust to exit right side behind rear wheel

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**TIRES & WHEELS**

**TIRES & WHEELS**

**Front:**

**Front:**

(3) – LT 225/75R16E all season, blackwall

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Wheels: manufacturer standard painted steel wheel; Brass tire valve stems with tire valve air thru stem caps

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**Rear:**

**Rear:**

(5) – LT 225/75R16E all season, blackwall

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Wheels: rear dual disc 6-16" x 6.5" gray painted steel; long brass tire valve stems with tire valve air thru stem caps

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Spare tire & wheel: Spare front & rear – mounted and equipped as stated above

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**GAUGE PACKAGE**

**GAUGE PACKAGE**

Odometer display: Miles, trip miles, engine hours, trip hours, and fault code read-out

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Cluster gauges (7): Engine oil pressure (electronic); coolant temperature (electronic); Fuel (electronic); Tachometer (electronic); Voltmeter (electronic); oil pressure (electronic); brake warning

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Driver information center; includes fuel range; Average speed; oil life; fuel used; ice warning; Engine hours; tachometer; maintenance reminder

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

**CAB PAINT & FINISH**

**CAB PAINT & FINISH**

DuPont # 93-508 White Imron; clear coat finish

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**OTHER ITEMS**

**OTHER ITEMS**

Driver and front passenger highback vinyl bucket seats; adjustable; head restraints; inboard arm rests

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Black rubberized vinyl front floor covering

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**All seat belts to be RED or ORANGE**

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Tinted window glass – all windows

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Inside manual Day/Night rear view mirror

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Integral air condition/heating/defrost system; side window defoggers; auxiliary fuel operated supplemental heat generator for HVAC system

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Clearance/marker lights (5) – amber LED lights; flush mounted on cab or sunshade

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Passenger entry assist handle

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Driver and front passenger cloth padded visors; cloth headliner

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Cup holders mounted on engine console

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Chrome front bumper with step pad

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Chrome front grill

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Front license plate kit

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

**SPECIFICATION DETAILS**

**SPECIFICATION DETAILS**

Chassis furnished shall be a two (2) door conventional cutaway cab design. The chassis shall be suitable for subsequent mounting of a modular (containerized), transferable equipped ambulance body conforming to the requirements herein.

Please include a detailed cab/chassis specification sheet(s) with bid package

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**CAB/CHASSIS VENDOR SHALL BE RESPONSIBLE FOR READING BODY SPECIFICATIONS, COORDINATING AND WORKING IN CONCERT WITH BODY VENDOR TO ENSURE PROPER MATCHING AND OPERATION OF BODY AND CAB/CHASSIS**

**Unit to meet all Virginia, Federal & OSHA Requirements**

**Cab/chassis to be delivered to body company; completed unit to be delivered to**

**City of Roanoke**  
**Fleet Management**  
**1802 Courtland Avenue, NW**  
**Roanoke, Virginia 24012**

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

**SEE NEXT SECTION FOR BODY SPECIFICATIONS**

**OUTSIDE REAR VIEW MIRRORS**

**OUTSIDE REAR VIEW MIRRORS**

The vehicle mirrors shall be Velvac Model # 714563 with heated/remote feature. Overall mirror to mirror width shall not exceed 108".

**ENVIRONMENTAL SYSTEMS**

**ENVIRONMENTAL SYSTEMS**

Air conditioning and heating unit shall be accessible for service through a tilt out access panel in a dedicated environmental cabinet on the bulkhead.

Air conditioning and heating system shall employ a three stage filtration system.

First stage filter shall be one hundred percent dacron fiber pre filter with an applied microbial system which destroys microorganisms with which it comes in contact.

Filter shall remove particles ten microns and larger at thirty five percent efficiency.

Second stage filter shall be activated charcoal dispersed over a fiber medium to assist in the removal of odors.

Third stage filter shall be a high efficiency particulate air filter that removes particles of decimal three microns and larger at ninety nine decimal ninety seven percent efficiency. The air delivery and return system must be a sealed system to not allow the passage of air other than through the three stage filter. The conditioned air shall pass through a multi-directional vent capable of dispersing high volumes of conditioned air at low velocity. This system must meet KKK-A1822-E revision performance parameters 3.13.4 and 3.13.5. Testing must be certified with filters in place.

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

Intake filters shall be located in the bottom left portion of the right front cabinet. The return air shall exit at the top of the right front cabinet.

**BULKHEAD CABINET**

Bulkhead cabinet shall separate the cab from the patient compartment with a sliding door to allow access between the two while providing privacy.

The open door shall allow for an aisle of at least 17 inches between the compartments. The door shall have at least a 150 square inch transparent, shatterproof viewing panel in the center section at the driver's eye level. The door shall be secured with a driver's side self-latching device in the open and closed positions.

**BULKHEAD SLIDING DOOR**

The door shall have at least a 150 square inch transparent, shatterproof viewing panel in the center section at the driver's eye level. The door shall be secured with a driver's side self-latching device in the open and closed positions.

**WHEEL COVERS**

Phoenix Wheel Covers installed prior to delivery. They shall include the extender kit for the rear wheels.

**MODULE BODY**

Body shall be 146" long x 90" wide, NO EXCEPTIONS.

**CAB EXTENSION**

Bulkhead cabinet shall be moved toward the rear of the patient compartment to allow for 3 inches of cab seat travel.

**DEALER SPECIFICATIONS**

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**BULKHEAD CABINET**

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**BULKHEAD SLIDING DOOR**

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**WHEEL COVERS**

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**MODULE BODY**

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**CAB EXTENSION**

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

**INTERIOR HEADROOM**

**INTERIOR HEADROOM**

Interior headroom shall be a minimum of 67 inches. \_\_\_\_\_

**VEHICLE BODY AND PATIENT  
AREA BODY ACCOMODATIONS**

**VEHICLE BODY AND PATIENT  
AREA BODY ACCOMODATIONS**

Ambulance body and patient compartment shall be sufficient in size to meet the requirements of paragraph 3.10.1 of Federal Specification KKK-A1822-E revision E. The interior layout shall be such that a technician can administer life support treatments to at least one person during transport. \_\_\_\_\_

**PATIENT COMPARTMENT  
INTERIOR DIMENSIONS**

**PATIENT COMPARTMENT  
INTERIOR DIMENSIONS**

**Length:** As measured from the bulkhead to the inside edge of the rear doors at the floor shall be at least one hundred and forty three inches. \_\_\_\_\_

There shall be at least twenty five inches but not more than thirty inches of clear space at the head of the primary patient, measured from the face of the backrest of the attendant's to the forward edge of the style one cot. \_\_\_\_\_

**Width:** Shall be measured after the installation of the street side cabinets will be forty four and three quarter inches between the cabinet wall and the face of the squad bench. \_\_\_\_\_

**Height:** The patient compartment shall provide at least sixty six inches of height over the primary patient area from the floor to the ceiling. \_\_\_\_\_

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

**BODY CONSTRUCTION**

**BODY CONSTRUCTION**

Modular body that is constructed solely of aluminum including side skins, roof skin, all structural box tubing, corner and roof extrusions, tapping plates, gusset plates, retention plates, doors, door extrusions, sub structure moisture barrier and drip rails. The modular shall be engineered, built and warranted by the primary manufacturer. The City of Roanoke will not accept a proposal from a primary manufacturer, as defined within this document, that supplies a modular from an agency, builder, supplier, other than the primary manufacturer. This section shall be the construction parameters this agency has deemed as fair value. Primary manufacturers that deviate from these specifications may take exception as set forth in section A1.1.2.

Exterior of the body shall be constructed utilizing a full six sided box framework with a combination of high strength 6061-T1 and 6063-T6 alloy aluminum and having an outer surface of aluminum sheet with a temper and alloy of 5052-H32 for strength, weld integrity and corrosion resistance. The front, sides, and rear of the modular shall be configured from a single sheet of .090 aluminum. The one piece sheets shall be used to maximize integrity against dust, toxic fumes, cracking, and moisture penetration. The openings for doors, warning lights and exterior compartments shall be cut on the horizontal plane with a computer controlled plasma cutter for accuracy and integrity of temper.

The panels that are cut for the patient and compartment openings shall be incorporated into the door assemblies. The roof and side skins shall be installed utilizing a very high bond adhesive to allow absorption of vibration and to eliminate "panning". The skins shall be welded to the interlocking extrusion framework at the outer perimeter of the sheets.

Roof shall be a single .090 sheet of 5052-H32 alloy aluminum. The roof sheet shall be completely welded to the extruded roof assembly. The use of multi section roofs shall not be acceptable due to the possibility of cracks causing environmental intrusion.

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Roof substructure assembly shall consist of four perimeter roof rail extrusions, lateral roof bows and interconnecting corner caps. The roof rail extrusions shall be engineered and designed by the primary manufacturer and shall be double hollow of 6063-T6 .125 aluminum. An integrated roof recess shall be incorporated to create a smooth transition from the one piece roof sheet to the perimeter drip rail. The perimeter drip rail shall be extruded as a design feature of the roof rail extrusion.

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Roof rail extrusion shall overlay the side skin by one half inch. The roof sheet shall be seam welded to the perimeter roof extrusion. The lateral roof bows shall be two inch by two inch by .125 square extrusions of 6061-T6 alloy aluminum. The structural members shall be located to support the roof skin on fourteen inches between roof bows. The roof bows shall interconnect with the roof rails and be continuously welded at all contact points. The finished roof shall incorporate a machine rolled crown of not less than one and half inches in height to provide additional strength and allow water run off. A one inch by two inch by .125 6063-T6 extrusion shall be secured to the top of the vertical extrusions. The perimeter extrusion shall be welded to the vertical structures with a minimum of six inches of weld. An industrial adhesive shall be applied around the perimeter before the roof assembly is mated to the sill. The roof structure shall be attached to the sill and welded. To insure a complete contact with the industrial adhesive mechanical fasteners shall be employed to cinch the roof structure to the sill.

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Corner caps shall be designed to interlock with the roof perimeter, vertical corner extrusions and roof sheet. The corner caps shall be cast aluminum made from matched metal dies to insure a smooth and pleasing appearance. The caps shall act as a stress relief device to absorb energy and disperse the force along the roof extrusions in the event of a collision.

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Corners of the modular body shall be designed and engineered by the primary manufacturer and constructed of 6063-T6 alloy aluminum. The corner extrusion shall be double hollow with a minimum thickness of .125 and .250 at the outer corner. The extrusion is designed with a unique forty five degree angled appearance while maintaining very high strength and impact energy absorption. A polyurethane sealer shall be applied to seal the crevice between the corner extrusions and the side assemblies.

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Side assemblies shall be reinforced utilizing 6061-T6 alloy aluminum two by two box tubing. The side structures shall frame a perimeter around all door openings and shall be a minimum of .125 in thickness. Intermediate skin stiffeners shall be located to preclude skin deformation. Additional gusset plates shall be .250 inch aluminum and shall be welded at all contact points between the corner assembly and the roof perimeter.

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All parts of the ambulance body, as specified in paragraph 3.10.6 of Federal Specification KKK-A1822-E revision, shall, where applicable, be of welded construction. Where fasteners are used in such areas as hinge attachment, hardware attachment, etc., the fasteners shall be ceramic coated aluminum and stainless steel. Any hole drilled into the modular body painted surface shall be coated with an ECK corrosion inhibitor prior to installation of the part, NO EXCEPTIONS

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Tapping plates of 6061-T6 alloy aluminum varying in widths of one quarter to one half inch shall be welded to the framing to secure the installation of equipment such as; cabinets, benches, partitions, cylinders, cot fasteners, etc. The body and panel joints shall be watertight and all openings between the chassis and modular shall be sealed. In addition a drip rail shall be supplied over each exterior compartment. The drip rail shall be attached in such a manner as to provide for quick and easy replacement. Drips rails attached by

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

mechanical fasteners shall not be used.

**BODY MOUNTING**

Mounting system shall not cause any chassis frame deformation. There shall be ten mounting points, five on each frame rail. The modular body shall have full perimeter welded sill rails of one half inch by two inch of 6061-T6 alloy aluminum and be attached to the vehicle utilizing one inch by three inch sill plates of 6061-T6 alloy aluminum. The modular body shall be welded to the sill plates at every exposed seam. At all outrigger mounting locations a double compression, neoprene rubber isolator mounts shall be used to minimize chassis vibration transfer to the modular body. The modular body and sill plates shall be attached to the frame rails using three quarter inch grade eight bolts. Any method contrary to QVM which may void the chassis warranty shall not be accepted.

**FLOOR**

Floor shall be at lowest level permitted by clearances, but not more than thirty three inches from the ground. The floor structure shall consist of two by two by .125 structural box sections with 6061-T6 alloy aluminum. The floor structure shall be welded with eight inches of weld at every joint. The openings created for the placement of exterior compartments shall have six inches of weld to insure a smooth surface to fit the compartment in the structure. Tapping plates of one quarter inch and one half inch of 6061-T6 aluminum shall be completely welded both sides to the floor assembly. The finished floor assembly shall be securely welded to the wall structures with eight inches of weld and skipped welded every four inches to the exterior compartments. All critical load points shall be reinforced with one quarter inch by three inch by four inch gusset plates. Above the floor channels there shall be an aluminum moisture shield .050 inches thick.

**DEALER SPECIFICATIONS**

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**BODY MOUNTING**

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**FLOOR**

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

The entire underside of the modular shall be sealed with a waterproof sealant. All hollow structural shapes or cavities shall be sealed utilizing approved expandable foam.

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A top floor of seven plies, three quarter inch boat grade plywood, sanded both sides with no voids, and shall be installed over the moisture barrier. The plywood shall be marine resin coated prior to installation to prevent warping due to ambient moisture absorption. The plywood floor shall be one piece from the bulkhead to the rear doors between the patient door steeple and squad bench and extend under the street side cabinets. The plywood floor shall be securely anchored to the floor sub structure with one quarter inch UNF machine by two and one half inch screws.

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The rear patient access shall be equipped with an exterior aluminum threshold mount to the lower door jamb. This threshold will protect the bottom door jamb, in addition the rear patient floor shall have a fourteen gauge stainless steel cot protector.

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**EXTERIOR STORAGE**

**EXTERIOR STORAGE**

Exterior compartments shall be constructed of .090 aluminum and shall be formed by a computer controlled brake and shear to decrease the amount of welding to fully enclose the compartment. The compartment therefore, shall be water tight. The compartment shall be welded in place to the side and floor structure with an additional bracket welded to a bracket connecting the exterior wall two with the floor structure. The floor of the exterior compartments shall be at least two inches below the lower door frame lip to help prevent equipment from falling out should a door not be closed. The compartment floor shall be supported from beneath with one by two by .125 6061 T-6 rectangular tubing welded to the underside and the floor structure. The inside of all compartments shall be fully finished with

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

a chip resistant, bacteriostatic, anti-fungal, mildew resistant sprayed on finish. All exterior compartments shall be vented below the floor line with one way baffled vents with gaskets of necessary size to displace the air when closing the exterior doors and not allow road wash, dust or other foreign particulate into the compartment. The exterior compartment shall be lockable with one key fitting all doors. The compartments shall be equipped with handle and door locks. Each exterior compartment shall be provided with a sealed light to be illuminated upon the door opening. The light shall be activated by a mechanical switch. A door open indicator light shall be visible on the driver's console. The compartment configuration shall be as described.

**PATIENT COMPARTMENT**  
**SOUND LEVEL**

**PATIENT COMPARTMENT**  
**SOUND LEVEL**

Shall meet the requirements of paragraph 3.13.8 of Federal Specification KKK-A1822-E revision

**COMPARTMENT FINISH**

**COMPARTMENT FINISH**

Inside of all compartments shall be fully finished with a chip resistant, bacteriostatic, anti-fungal, mildew resistant sprayed on finish.

**EXTERIOR COMPARTMENTS**

**EXTERIOR COMPARTMENTS**

Bottom of compartments "B1", "D", and "E" shall drop down 3 inches from the door opening for maximum storage space in the compartment.

Bottom of compartments "A" and "F" shall be flush with the door opening to provide for a sweep out design.

**DOORS**

**DOORS**

Outer face of the door and door edges shall be formed from one sheet of 5052-H32 aluminum. The door shall be flush with the body side. The

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

outer skin shall be 0.125 inches thick and shall be welded every six inches (6") to the inner door frame using a minimum of one and one-half inch (1-1/2") long bead. All corners shall be welded a minimum of two inches (2") in each direction. The edge of the door shall be seamless.

Door frame shall meet with the exterior skin with a smooth seamless transition. There shall be no seams or crevices on the door or the door frame which allows the possibility of corrosion.

Both patient compartment and exterior compartment doors shall be provided with extruded rubber seal system consisting of a hollow cell bulb gasket. The gasket shall insert into an appropriately designed groove in the inner door extrusion. Glued on seals or seals that are mounted to the compartment openings are unacceptable.

All doors shall be attached using minimum 1/4-20 stainless steel hex bolt with stainless steel piano hinges with a pin of at least 0.250 inch in diameter. The hinge must be slotted to provide field adjustments. An ECK corrosion inhibitor shall be applied to the door frame and jamb bolt holes prior to installing the hinge.

All compartment doors shall be constructed the same as the entry doors. To ensure continued door alignment and successful latching capabilities, all access doors must be encased by a door jamb that is separate from the body skin and welded to the 2" x 2" tubular body frame members. The door jamb shall be a 0.125"/0.380" thick 6063-T6 aluminum extrusion.

Interior surface of the patient compartment doors (rear and curbside) shall be finished in diamond plate and smooth aluminum covered with reflective chevrons. The interior surface of the compartment doors shall be finished in smooth aluminum. The door panels shall be designed to allow removal without disturbing the door latching hardware. Door panels

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

must be flush fitting not overlay. Doors using pliable materials such as upholstery are prohibited due to greater risk of contamination by blood born pathogens through stitching or when cut or torn.

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Three (3) patient compartment doors shall be fitted with stainless steel, flush fit, "paddle latch" hardware on the interior and an "automotive style" handles on the exterior. The patient compartment doors shall be provided with a keyed lock and the rear doors and side door shall be lockable from the inside without a key per FMVSS.

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When the doors are opened, the hinges, latches and door checks shall not protrude into the access area. All patient compartment doors shall employ the same type locking hardware. All door latches shall comply with requirements of FMVSS 206.

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The locking devices shall be two-stage rotary latches and shall be FMVSS 206 certified. Where applicable, there shall be two door latches, one at the top and one at the bottom, controlled by a single locking handle. The latches shall lock into an adjustable "Nader" type pin located in the door frame. The Nader will utilize a captive nut to provide adjustment and replacement without loss of the nut plate. The locking system shall be actuated from the locking handle by metal push rods.

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Outside door handles shall be a rugged "automotive style" that are near flush with the door skin. These handles shall provide adequate clearances for the use of gloves. The hand/glove clearance area of the automotive style handle shall be a minimum of .812" deep by 4.125" long.

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On the curb side and rear doors, the inside handle shall be a "paddle style" type constructed from stainless steel and shall be equipped with an inside door lock. All exterior storage compartments and module entry doors shall be lockable with the same key.

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Compartment and entry door shall be painted separately from the modular body. The doors shall then be installed on the painted module. An ECK corrosion inhibitor shall be applied to the door frame and jamb painted extrusion prior to installing the doors to provide a barrier between the hinge and the paint. \_\_\_\_\_

All entry and compartment doors shall be insulated with 2-1/2" thick closed cell block foam insulation. \_\_\_\_\_

**COMPARTMENT A**

**COMPARTMENT A**

Compartment "A" is the passenger side forward compartment. The door opening dimensions shall be approximately 14.75 inches high and 14.25 inches wide. The interior dimensions shall be approximately 15.25 inches high and 15 inches wide and 16 inches deep. The door shall be fastened to a slide out battery tray. \_\_\_\_\_

**COMPARTMENT B1**

**COMPARTMENT B1**

Compartment "B1" is on the passenger side just behind the rear wheel. The door opening dimensions shall be approximately 24.75 inches high and 34.75 inches wide. The interior dimensions shall be a approximately 28.5 inches high and 38 inches wide and 16 inches deep. \_\_\_\_\_

**COMPARTMENT D**

**COMPARTMENT D**

Compartment "D" is on the driver's side just behind rear wheel. The door opening dimensions shall be approximately 78 inches high and 30 inches wide. The interior dimensions shall be approximately 80.75 inches high and 33.25 inches wide and 16 inches deep. \_\_\_\_\_

**COMPARTMENT E**

**COMPARTMENT E**

Compartment "E" is on the driver's side just forward of the rear wheel. The door opening dimensions shall

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

be approximately 34.25 inches high and 21.25 inches wide. The interior dimensions shall be approximately 38 inches high and 23 inches wide and 16 inches deep. The upper portion shall be doglegged above rear wheel well and shall be approximately 12 inches high and 7 inches wide and 16 inches deep.

**COMPARTMENT F**

Compartment "F" is the driver's side forward compartment. The door opening dimensions shall be approximately 61 inches high and 17 inches wide. The interior dimensions shall be approximately 61 inches high and 17.25 inches wide and 16 inches deep

**FUEL FILL HOUSING**

Cast aluminum fuel fill housing shall be installed according to the chassis manufacturer's instructions.

**EXTERIOR VERTICAL DIVIDERS**

A vertical divider shall be located in compartment "D" approximately 10 inches from wall 1, which is the closest wall towards front of vehicle. It shall be manufactured of .1875 inch aluminum and shall be painted with scratch resistant gray Zolatone paint. The divider shall be approximately 11 inches wide and extend from the top of the compartment to the bottom

**EXTERIOR COMPARTMENT SHELVES**

Adjustable exterior compartment shelves shall be manufactured from 0.125 inch aluminum. Each shelf shall have a 0.125 inch thick ribbed rubber mat. The shelf track shall be heavy duty extruded aluminum.

**DEALER SPECIFICATIONS**

**COMPARTMENT F**

**FUEL FILL HOUSING**

**EXTERIOR VERTICAL DIVIDERS**

**EXTERIOR COMPARTMENT SHELVES**

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Shelves shall be located in the following cabinets and compartments:

RF/E1 Cabinet:	QTY 2	_____
Compartment D:	QTY 2	_____
Compartment F:	QTY 1	_____

The adjustable shelves in compartment "D" shall be located between the vertical divider and wall 3, which is the closest wall towards rear of vehicle.

**STEP WELL AND WINDOWS**

**STEP WELL AND WINDOWS**

Curb side door step well shall have a light recessed into wall one of the step well. It shall be automatically lit when the side and rear doors are opened. The light shall be activated by a switch. The step well shall be finished with a polished aluminum diamond plate. There shall be a window in each of the three patient access doors. The window frame shall be of an extruded aluminum design with a protective anodized finish. The curbside entry door window shall include a sliding window to allow for fresh air when needed. The two rear door windows shall have fixed glass. The curbside window shall have the following dimensions: 26 1/2 inches high and 19 1/2 inches wide. The rear windows shall be 22 1/2 inches high and 13 1/2 inches wide. The glass in the curbside and rear entry doors shall have a privacy tint.

**PATIENT ENTRY DOOR LATCHES**  
**LATCHES, HINGES, & HARDWARE**

**PATIENT ENTRY DOOR**  
**LATCHES, HINGES &**  
**HARDWARE**

When the doors are opened, the hinges, latches and door checks shall not protrude into the patient compartment. All patient doors shall employ the same type of locking hardware. All door latches shall comply with FMVSS 206. The locking devices shall be two stage rotary latches and shall be in accordance with FMVSS. Where necessary, there shall be two

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

door latches, one at the top and one at the bottom, controlled by a single locking handles. The latches shall lock into an adjustable Nader type pin located in the door frame. The Nader will utilize a captive nut to provide adjustment and replacement without loss of the nut plate. The locking system shall be from the locking handle by aluminum push rods. The door handles on all patient doors shall be a paddle handle. The door handle shall be mounted to the exterior door panel using mechanical fasteners and rubber gaskets that will eliminate the possibility of electrolysis. The patient compartment doors will be equipped with an inside door lock. All entry doors shall be lockable with same key. All entry doors shall have horizontal aluminum reinforcements welded to the door frame and the entry doors shall have closed cell block foam insulation. The handles shall be keyed with a #J236 key.

**COMPARTMENT DOOR LATCHES, HINGES**  
**LATCHES, HINGES AND**  
**HARDWARE**

**COMPARTMENT DOOR**  
**LATCHES, HINGES AND**  
**HARDWARE**

When the doors are opened, the hinges, latches and door checks shall not protrude into the patient compartment. All compartment doors shall employ the same type of locking hardware. All door latches shall comply with FMVSS 206. The locking devices shall be two stage rotary latches and shall be in accordance with FMVSS. Where necessary, there shall be two door latches, one at the top and one at the bottom, controlled by a single locking handles. The latches shall lock into an adjustable Nader type pin located in the door frame. The Nader will utilize a captive nut to provide adjustment and replacement without loss of the nut plate. The locking system shall be from the locking handle by aluminum push rods. The door handles on all compartment doors shall be a flush fitting stainless steel paddle style. The door handle shall be mounted to the exterior door panel using mechanical fasteners and rubber gaskets that will eliminate the possibility of electrolysis. All doors shall have closed cell block foam insulation.

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

The handles shall be keyed with a J236 key.

**OEM DOOR LOCKS**

The OEM electric door switches shall lock and unlock the entry doors

**POWER DOOR LOCKS**

The entry doors shall include power door locks that enable remote activation

A momentary rocker switch shall be recessed in squad bench next to right rear entry door and enable the power door locks for the entry doors.

A stealth switch shall be located in compartment "E", wall 1, upper left corner, next to door jamb and enable the power door locks for the module entry, and cab doors. The switch must be weather resistant.

**REAR DOOR HOLD OPENS**

Rear doors shall be held open by 4 Cast Grabbers. The U shaped piece shall be attached to the rear doors both top and bottom. It shall enter into a rubber insert when the doors are in the open position.

An ECK corrosion inhibitor shall be applied to the mounting holes prior to installation.

**CURBSIDE DOOR HOLD OPENS**

Curbside door shall be held open by 2 Cast Grabbers. The U shaped piece shall be attached to the curbside door both top and bottom. It shall enter into a rubber insert when the doors are in the open position. An ECK corrosion inhibitor shall be applied to the mounting holes prior to installation.

**DEALER SPECIFICATIONS**

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**OEM DOOR LOCKS**

---

**POWER DOOR LOCKS**

---

**REAR DOOR HOLD OPENS**

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**CURBSIDE DOOR HOLD OPENS**

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

**COMPARTMENT DOOR HOLD OPEN**

**COMPARTMENT DOOR HOLD OPEN**

Compartments “B1”, “D”, “E”, and “F” shall have a 30 pound gas strut in lieu of a spring loaded hold open.

**DOOR PANELS**

**DOOR PANELS**

Upper section of the curbside and rear door panels shall be diamond plate the center and lower sections shall be smooth aluminum with reflective chevrons.

**REAR FENDERS**

**REAR FENDERS**

Chrome fenders shall be provided around the rear wheel well openings to provide protection from wheel wash.

An ECK corrosion inhibitor shall be applied to the mounting holes prior to installation.

**BUMPERS AND STEPS**

**BUMPERS AND STEPS**

The chassis manufacturer shall supply the vehicles front bumper. The rear bumper and step assembly shall be a single unit constructed of ten gauge steel “C” formed channel and .100 inch thick aluminum tread plate as measured at the thinnest point of the tread plate. The center step of the bumper assembly shall be designed to allow it to flip up and out of the way to facilitate patient loading. The flip up section of the rear bumper shall be diamond plate with punched holes that form grips. (Gator Grip) It shall meet the requirements of KKK-A1822-E specification. A stainless steel hinge with a center pin of .250 inch shall be used to attach the flip up section of the rear step to the main rear bumper assembly. This bumper assembly shall be bolted to supports that have been welded to the chassis frame. There shall be eye beam constructed skid plates with tow eyes mounted as part of the frame of the bumper. This assembly shall be

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

bolted to the frame of the chassis with 5/8 inch Grade 8 bolts. There shall be a three inch red LED marker light on the street side and curb side of the bumper assembly. These lights shall be a sealed unit and the connectors protected with an adhesive heat shrink. The lights shall flash with the turn signals and shall illuminate with the vehicle head light control. There shall be a one half inch clearance between the bumper assembly and the rear of the modular body to allow water drainage and inhibit water collection.

---

Above the rear bumper and below the rear doors, there shall be a full length riser of smooth aluminum with reflective chevron for a protective kick panel. The kick panel shall be securely fastened with ceramic coated stainless steel screws to inhibit rust that could result from electrolysis and run the full rear width of the module. Pop rivets are not acceptable.

---

The rear bumper shall be raised approximately 2 inches from standard location to allow additional ground clearance when entering and exiting a steep incline.

---

**REAR DOCK BUMPERS**

**REAR DOCK BUMPERS**

Dock bumpers shall be installed on each outboard pontoon on the rear bumper. The dock bumpers shall measure 10 inches wide and 4 1/2 inches high and 3 inches deep.

---

Running boards shall be a diamond plate with punched holes that form grips.(Gator Grip)

---

**SKIRT RAILS**

**SKIRT RAILS**

Street side and curbside modular body shall be provided with aluminum diamond plate skirt line trim rails. The rails shall be installed along the lower edge of the body. The rails shall be offset from the sides by a minimum of one half inch to allow water and road wash not to collect between the rail and modular rail. Nylon spacers shall be used to install the rails to eliminate the possibility of

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

electrolysis.

**FRONT STONE GUARDS**

**FRONT STONE GUARDS**

The lower front corners of the patient compartment shall have stone guards attached to the corner extrusion. They shall be diamond plate aluminum and extend from the bottom edge of the corner extrusion up 13 inches

**REAR KICK PLATE**

Above the rear bumper and below the rear doors, there shall be a full length riser of smooth aluminum with reflective chevron. The kick panel shall be securely fastened with ceramic coated stainless steel screws to inhibit rust that could result from electrolysis and run the full rear width of the module. Pop rivets are not acceptable. There shall be a cast products license plate holder in center of rear kick plate.

**LICENSE PLATE HOLDER**

**LICENSE PLATE HOLDER**

A Cast Products C30002, (or approved equal) license plate holder shall be installed in the rear kick plate

**COMPARTMENT SILL PROTECTORS**

**COMPARTMENT SILL PROTECTORS**

Stainless steel sill protector shall be located at curbside and rear entry doors. It shall be manufactured from 20 gauge stainless steel and cover the bottom door frame protecting it from scratches.

Sill protector at rear entry doors shall be a cascade style to protect painted surfaces from damage when unloading and loading cot.

An anti-slip decal shall be installed on curbside and rear stainless steel thresholds

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

**DIAMOND PLATE WHEEL WELL**

**DIAMOND PLATE WHEEL WELL**

Diamond plate shall be installed above the wheel well area. It shall extend up approximately 24 inches above bottom edge of module.

---

**REAR MUD FLAPS**

**REAR MUD FLAPS**

Rear mud flaps to be plain black rubber (both sides) with no logos

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**PREPARATION FOR PAINTING, COLOR AND MARKINGS**

**PREPARATION FOR PAINTING, COLOR AND MARKINGS**

All bare aluminum shall be coated with a corrosive resistant self etching primer. An automotive urethane sealer shall be used as well as an automotive urethane topcoat. The primer, sealer, and topcoat shall be a minimum of three point three mils thick. A small amount of body filler may be used to smooth imperfections in the aluminum. Colors and markings will be determined by this agency. The vehicle shall meet salt spray resistance and vehicle undercoating as set forth in paragraph 3.16.3 and 3.17 respectively of Federal Specification KKK-A1822-E revision.

---

The compartment and entry doors shall be painted separately from the modular body. The doors shall then be installed on a fully painted module, no exceptions

---

**Cab:** White paint on cab roof and windshield post. Red paint from bottom of windows in cab doors to bottom of cab.

---

**Module:** White paint on module roof. Red paint from bottom of drip rail on module roof to bottom of module.

---

**Paint Code: Red - FLNA 3248**

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

White reflective four inch stripe shall be installed to match existing City of Roanoke Ambulances.

\_\_\_\_\_

Two white reflective 2 inch stripes shall be installed to match existing City of Roanoke Ambulances

\_\_\_\_\_

A "Star of Life" of not less than 32 inches and conforming to KKK-A1822-E revision, section 3.16.4.C shall be installed on the ambulance rooftop.

\_\_\_\_\_

Electrical components such as junction blocks, terminals, breakers, relays, shunt, and batteries shall be labeled.

\_\_\_\_\_

**ELECTRICAL SYSTEMS AND COMPONENTS**

**ELECTRICAL SYSTEMS AND COMPONENTS**

Emergency medical vehicle's electrical system must meet KKK-A1822-E revision, Section 3.7.1.

\_\_\_\_\_

Driver and patient compartment control consoles shall be constructed in a way that the switches and any gauges are easily serviced. They shall be accessible through service panels. These panels will be secured in the closed position in a positive manner, yet can be easily opened for service.

\_\_\_\_\_

Control console gauges shall be internally illuminated and controlled by the headlight switch rheostat. All lights and fixtures installed on the module exterior shall have an ECK corrosion inhibitor applied to all mounting holes prior installation, no exceptions.

\_\_\_\_\_

driver and patient console shall incorporate full size "Euro-Style" rocker switches. The switch assembly shall be 1.97 inches tall by 1.064 inches wide with silver plated copper contacts and a .250 inch spade type terminal. The rocker switch shall incorporate a LED indicator lamp and rated at 15 Amps continuous service. The switch and rocker shall be of a thermo set molding material. The complete switch assembly shall be designed withstand one thousand (1,000) volts RMS dielectric test. The switches shall have a positive

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

"throw" feel and an audible click upon activation and deactivation.

---

Rocker switches, as described in section 4.1.3, shall have integrated label lens area that is illuminated by two independent LED's. The LED brightness shall be controlled by the headlight rheostat. The label shall be white legends on black poly carbonate background.

---

OEM throttle monitor shall be mounted in the primary manufacturer's console. It shall be mounted to be easily accessible to the driver.

---

Electrical system shall incorporate a warning light panel in the driver's console. It shall provide indicator lights for showing, a patient compartment door(s), side and rear, are open. This shall be a flashing red LED light. There shall be an exterior compartment "door open" warning light. This shall be a flashing red LED light of the same size.

---

A module power indicator light shall be provided. It shall be a green light located in the warning light panel. It shall illuminate when the ignition switch is turned on and battery power is applied to module. The light shall be steady burn to indicate the batteries have been selected.

---

Ambulance body and accessory electrical equipment shall be served by circuit(s) separate and distinct from the vehicle chassis circuits. Wiring methods must conform to SAE J1292.

---

All wiring provided by the primary manufacturer shall be copper and conform to all the SAE J1127 and SAE J1128 requirements. All low tension primary cable shall have GXL or better insulation. All low tension battery cable shall have SGX insulation. Documentation from the wiring manufacturer that the wire used by the primary manufacturer is in compliance with this requirement shall be submitted with the proposal. Bids not meeting

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

this requirement will not be accepted.

---

Wiring shall be permanently color coded identify wire function. Wires shall be permanently heat ink embossed with both number and function codes. The function code shall be the descriptive name of the circuit served. The number code shall be the exact purpose of that circuit. This number code shall be completely referenced in a detailed wiring schematic provided with the vehicle. The function and number code shall be embossed at a minimum of four inch intervals the entire length of the wire terminating into all switch and control panels.

---

Use of multi-conductor cable must be function and color coded and shown on the wiring diagram.

---

Wiring shall be routed in conduit or high temperature looms with a rating of 300 degrees Fahrenheit where necessary to protect it. All added wiring shall be located in accessible, enclosed, and protected locations and kept at least six inches from the exhaust system components. Electrical wiring and components shall not terminate or be routed in the oxygen storage compartment except for the oxygen controlled solenoid, compartment light, and switch plunger. All conduits, looms, and wiring shall be secured to the body or frame with insulated metal cable straps in order to prevent sagging and movement which results in chafing, pinching, snagging or any other damage. All apertures on the vehicle shall be properly grommet and sealed for passing wiring and conform to SAE 1292.

---

All items used for protecting or securing the wiring shall be appropriate for the specific application and be standard automotive, aircraft marine or electronic hardware

---

Circuit connections shall be made on barrier style terminal blocks utilizing binding post screws for positive mechanical connections. minimize the potential for wiring shorts and voltage drops all wiring terminals shall be brass, tin plated, annealed,

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

ETP copper with nylon high heat insulation. Serration's, inside the barrel, provide maximum contact and tensile strength after crimping. Connection shall be machine crimped to UL standards, with a high quality crimping tool that produces crimps for a given size wire and terminal that are precisely alike in appearance and performance. Crimping pressure must be controlled by a ratchet device on the hand tool or a corresponding pre-calibration in the crimping jaws of an automated machine.

---

Crimping pressure can neither over-stress nor under stress the terminal-barrel-machined dies. Therefore, this agency requires a termination that is free of contamination and is extremely resistant to shock and critical environment conditions.

---

No splices shall be permitted except for connection of "pig-tail" devices. Butt splices are permitted for connection of "pig-tail" devices. The use of IDC (Insulation Displacement Connectors) connectors, i.e.: "3M Scotchlok" type fasteners, is not acceptable.

---

The various wiring installations as supplied with this vehicle shall be of the automotive "harness" design. For ease of identification and future replacement these harnesses shall be engineered and manufactured in the following sections.

1. Engine compartment harness.
2. Driver's control console harness.
3. Main module harness.
4. Chassis rear lighting harness.

This agency is extremely concerned the primary manufacturer has the ability to control warranty and replace the harnesses. That end, the primary manufacturer shall not subcontract the construction of these harnesses.

---

All wiring devices, switches, outlets, etc., except circuit breakers, shall be rated carry a minimum of

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

one hundred and twenty-five percent (125%) of the maximum ampere load for which the circuit is protected. All wires carrying a load of more than 5 amperes shall be a minimum of 16 AWG. There shall be a master electrical component panel located in the vehicle. It is preferred that the master panel be mounted on or near the bulkhead of the patient compartment.

---

Standard circuit breakers, relays, and diodes shall be mounted on a printed circuit board that is easily accessible. All components on the circuit board shall be permanently labeled as to their function

---

Printed circuit board shall be designed and manufactured as follows: A screen printed board with all circuits fully numbered and labeled. The circuit board shall be a double-sided copper trace printed circuit with a double-sided laminated isolator. The board shall be non photo image able solder mask over bare copper with hot air leveled solder over non masked copper. Fuse capacity is the beginning factor in calculating trace width to ensure proper current carrying capability. The circuits shall then be oversized as much as space permits for maximum cooling of the board.

---

All holes shall be plated through. The terminal strips shall be mounted on the board for connection of the above mentioned wiring harness. Automotive transient suppressers must be incorporated into circuit board at the point of cable entry to the board. All relays must include built in noise suppression. The suppression must be accomplished with a IN4001 parallel with the coil. The relay must have a 40 ampere continuous contact rating with one form C contact arrangement. Normally open contact must have a maximum initial voltage drop of 200 milli-volts at 40 ampere contact load. The relays must withstand 24 VDC for five minutes conducting rated contact current in case of accidental 24 volt jump start condition. Circuit board options must be programmable via jumpers facilitate addition of options.

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Color of wire and circuit number must be screened printed at the terminal block connections on the board for rapid identification and relation schematics.

\_\_\_\_\_

Printed circuit board shall incorporate red LED indicators for on board diagnostics for input, output, and switching circuits for troubleshooting at a glance.

\_\_\_\_\_

Printed circuit board must meet the following specifications:

1. Packaging and Interconnecting Acceptability  
Standard number IPC 600
2. UL-796
3. Solder mask, IPC number SM-840
4. Solder in conformance with MIL SPEC QS-571
5. Laminate in conformance with IPC number 4101

\_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

A service loop of wire or harness, per KKK-A1822-E revision specification, shall be provided at all electrical components, terminals, and connection points. All relays shall be mounted for ease of serviceability. All high current diodes greater than 5 amperes shall be heat sink mounted. provide the optimum circuit "overload" protection, the electrical system's main circuit board shall allow for the use of stud type automatic reset pole breakers. One spare 15 ampere circuit breaker shall be provided for future use. A solid state electronic flasher shall be heat sink mounted to the panel for control of the flashing warning light system.

\_\_\_\_\_

All wiring between the cab and module shall be connected to a terminal strip(s) or block(s) or use multi pin connectors on the electrical component panel and shall provide for future module replacement. All connectors and terminals provided shall comply with SAE J163, J561, or J928 as applicable.

\_\_\_\_\_

Master Module disconnect switch shall be located on the driver's compartment console and shall be permanently labeled and back lighted with a LED

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

light and the brightness controlled by the head light rheostat. The "MASTER" disconnect switch shall be considerably different in size and feel from the other console switches.

---

All switches and controls for the patient compartment shall be located on a service panel in the Action Area angled slightly toward the rear of the vehicle. These switches shall not function until the "MASTER" switch in the driver's console is in the "ON" position. The patient compartment switches shall be permanently marked and back lighted by a LED light.

---

Electromagnetic radiation and suppression must meet KKK-A1822-E revision specification. Documentation from an independent testing laboratory must be included with the bid

---

Battery cables shall be a minimum 2/0 AWG or as supplied by the chassis manufacturer. If the batteries are relocated other than the factory location, cables shall be upgraded a minimum 3/0 AWG. This is required to maintain compliance with SAE J541 specification for starter motor circuit voltage drop for heavy duty applications.

---

**All primary manufacturers must meet this specification.**

All cables larger than 10 AWG shall be pneumatically or hydraulically crimped utilizing tin plated copper connectors. This connection must be covered with an adhesive lined heat shrink to permanently seal against weather.

---

Dual 12 volt battery system. Two OEM batteries shall be in the right front lower compartment and mounted in a slide out battery tray. This compartment shall be isolated from the patient compartment. The batteries shall be activated through the OEM ignition switch. The ignition switch shall only turn off power to the module and not to the chassis. An emergency fail-safe switch shall be mounted in the electrical panel behind the attendant's seat.

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Battery system shall be wired in accordance with KKK - A1822 – E, current Ford Motor QVM Specifications, and chassis manufacturer specifications.

---

The system must meet SAE J541 for starter circuit voltage drop.

---

A momentary rocker switch shall be mounted to left of master switch to activate battery switch with 5 minute timer to shut off battery switch if ignition is off.

---

Antenna Cable Installation shall meet the requirements of paragraph 3.14.3 of Federal Specification KKK-A1822-E revision.

---

Coax cable shall run from cab roof to cab console. There shall be a 6 foot pigtail at each termination point.

---

Patient compartment shall be furnished with a 12 volt DC, 20 ampere capacity, separately protected circuit, with two outlets. The outlets shall be Cigar Lighters and shall be located in the Action Area.

---

A 20 amp Auto Eject shoreline inlet with a GFI shall be installed and located above compartment “E”. The inlet shall have a yellow cover.

---

Shoreline Indicator Light shall be installed on driver’s side of ECC console. A green light shall indicate that there is power from the GFI breaker to the shoreline inlet

---

115 volt AC utility power must meet KKK-A1822-E revision. Utility power shall be as described in KKK-A1822-E revision, paragraph 3.7.8.1. Electrical 115 volt AC receptacles shall be as described in KKK-A1822-E revision, paragraph 3.7.8.2

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Two 110VAC duplex outlets shall be installed in the patient compartment. One outlet shall be located in the action area, and one outlet shall be located in the upper portion of RF/E1 cabinet.

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An additional 110VAC duplex outlet shall be installed in lower portion of RF/E1 cabinet.

---

A Vanner 20-1050CULW Inverter/Charger shall be installed beneath attendant's seat. It shall power the 110VAC outlets. A switch shall be installed in the action area

---

There shall be a console in the action area of the rear patient compartment house the switches. The console shall be manufactured out of 3/4" birch wood and be angled so that the switches will be easily accessible an EMT in the attendant seat or a CPR seat.

---

A console shall be installed to house the switching panel and radio installation. This console shall be attached to the engine cover housing below the line of sight of the driver. The console shall be a rotationally molded one piece ABS console. An access panel shall be installed on the p of the console facilitate servicing. The switches shall be full size rocker switches with LED on the indicators. The switch assembly shall be 1.97 inches tall by 1.064 inches wide with silver plated copper contacts and a .250 inch spade type terminal. The switch and rocker material shall be a thermal set molding material. The complete switch assembly will be tested to withstand one thousand (1,000) volts RMS dielectric. The switches must have a positive "throw" feel and an audible "click" upon activation.

---

Electrical system shall incorporate an analog center scale ammeter be similar the analog display gauges of the OEM chassis manufacturer. The ammeter shall be capable of indicating a current of 300 amperes or from (charging or discharging) the dual batteries. The ammeter shall incorporate an external shunt which

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

does not exceed 100 millivolts at maximum current. \_\_\_\_\_

The ammeter and shunt shall have a combined accuracy of approximately ten percent of the full scale reading. It shall be back lighted with the brightness controlled by the headlight rheostat. The shunt shall be protected against physical damage, weather and road spray and shall be mounted in an easily accessible location which shall minimize the length of the power cables. Note primary manufacturers: Only electro-dynamic ammeters shall be accepted due their accuracy and durability.

\_\_\_\_\_

Vehicle shall include a Datcon, (or approved equal) analog voltmeter. It shall be located in the front center console next the ammeter.

\_\_\_\_\_

Engine Hour Meter shall be installed in the driver's seat base. It shall be a Datcon 100-223 12-24, (or approved equal).

\_\_\_\_\_

Emergency Master Switch shall be located in the Engine Cover Console just right of the Master Switch. The engaged emergency master switch shall turn on all of the emergency lights in a programmed sequential manner if the master switch is in the on position.

\_\_\_\_\_

A Kussmaul Sequencer shall turn on essential loads such as primary warning lights first and then any optional lighting in a programmed sequential order and it shall turn them off in the reverse order

\_\_\_\_\_

**SIREN**

**SIREN**

Ambulance shall be equipped with two 100 watt speakers mounted in front bumper.

\_\_\_\_\_

Ambulance shall be equipped with hands free electronic siren with silent testing. The siren shall be a Whelen WS-295-HFSA1, (or approved equal)

\_\_\_\_\_

Siren shall be switched through the horn ring.

\_\_\_\_\_

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Air horn shall be switched with a foot switch located on driver's side, outboard, up high.

\_\_\_\_\_

One 12VDC rocker switch shall be located in cab console and shall power opticom. One 12VDC rocker switch shall be located in action area and shall power the two additional LED dome lights in module headliner.

\_\_\_\_\_

A backup alarm with a cut off switch shall activate when the vehicle is shifted into reverse. The alarm shall automatically be reset and engage when the vehicle is placed in reverse again. The device must meet OSHA and SAE J994 requirements, and shall be rated (SAE) for Type C or B.

\_\_\_\_\_

**EMERGENCY LIGHTING**

**EMERGENCY LIGHTING**

A Whelen Traffic Advisor TA8852L, (or approved equal) shall be installed on the rear of the patient module.

\_\_\_\_\_

A Whelen 3M Opticom shall be installed on front of Module.

\_\_\_\_\_

Eight Whelen 90RR5FRR, (or approved equal) Red Super LED lights shall be located as follows:

Two located on each side of module.

\_\_\_\_\_

Two located in upper outer corners on front of module.

\_\_\_\_\_

Two located in upper outer corners on rear of module.

\_\_\_\_\_

Flash pattern shall be Action Scan.

\_\_\_\_\_

Two Whelen 90RR5FRR, ( or approved equal) Red Super LED lights shall be located as follows:

One located on each side between center clear super LED light and outer red super LED lights on front

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

of module.

---

Flash pattern shall be Action Scan

---

One Whelen 90RR5FCC, (or approved equal)  
Clear Super LED light shall be located on center  
front of module.

---

Four Whelen 70R02FRR, (or approved equal)  
Red Super LED lights shall be installed as follows:

Two located as front grille lights.

---

Two located as front intersection lights.

---

Flash pattern shall be Action Scan

---

Two Whelen 70R02FRR, ( or approved equal)  
Red Super LED lights shall be installed as rear  
intersection lights.

---

Flash pattern shall be Action Scan.

---

Whelen 70A02FAR, (or approved equal) Amber  
Super LED light shall be installed on center rear of  
module.

---

Flash pattern shall be Action Scan

---

Whelen, ( or approved equal) chrome flanges shall  
be installed on all 7E series lights.

---

Primary manufacturer shall incorporate DOT  
marker lights at the highest point of the vehicle.  
The marker lights shall be visible 360 degrees. In  
addition, each corner marker light shall be recessed  
and visible 180 degrees. Also at each corner, the  
marker light lens cover shall be tilted upward on a  
45 degree angle to be visible above the horizontal  
plane for 360 degrees.

---

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

These measures will insure the vehicle will be visible in low light conditions with the headlights in the "on" position. Bolt on upper clearance lights or clearance lights within the support corner extrusions will not be accepted.

Amber lenses shall be installed on the front corners and Red lenses shall be installed on the rear corners. The light shall be LED.

**CLEARANCE LIGHTING**

**CLEARANCE LIGHTING**

Three amber LED clearance lights shall be installed in center of front roof rail

Three red LED clearance lights shall be installed in center of rear roof rail.

**EXTERIOR FLOOD LIGHTS**

**EXTERIOR FLOOD LIGHTS**

Four Whelen 90E000ZB, ( or approved equal) Clear lights shall be installed. Flood and loading lights shall not be less than seventy-five inches above the ground and shall not be obstructed by open doors.

Two floodlights shall be located on each sides of the vehicle and be firmly fastened to the body surfaces below the roof line. The side flood lights shall be controlled from the cab console and be independently switched.

**EXTERIOR LOADING LIGHTS**

**EXTERIOR LOADING LIGHTS**

Two Whelen 70K000ZB, ( or approved equal) halogen loading lights shall be provided above the rear doors and shall illuminate the area surrounding the back loading and unloading doors. The lamps shall project downwards at a twenty-six degree angle from the horizontal plane.

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Rear loading lights shall activate automatically when the rear doors are open regardless of the switch position in the cab console. The rear load lights shall be incorporated with the FMVSS backup lighting system

---

**SCENE LIGHTING**

**SCENE LIGHTING**

Curbside scene lights shall be activated when the curbside door is opened.

---

Rear scene lights on both the curbside and street side shall activate when the vehicle is place in the reverse gear.

---

**FLASHERS**

**FLASHERS**

An ETM (ETRRSSDR), ( or approved equal) head light flasher/daytime running lights shall be installed

---

Vehicle shall include a circuit that will override the headlight flasher when the head-lights are turned on

---

**OTHER LIGHTING/ELECTRICAL**

**OTHER LIGHTING/ELECTRICA**

Two LED license tag lights installed on either side of the rear license plate.

---

Six lights shall be installed on rear of module. Two lights shall be red LED tail lights; two lights shall be amber LED turn/hazard lights and two lights shall be clear halogen back up lights; One of each of the above lights shall be installed on the passenger side and driver's side on rear of module.

---

A waterproof connection to the OEM tail light harness is required.

---

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

The basic interior compartment shall be provided with seven overhead dual intensity halogen lights. The lights shall be Weldon 8046, ( or approved equal). There shall be four lights located over the primary patient stretcher and three over the squad bench. These lights shall be mounted into the patient compartment fiberglass head liner and shall not protrude into the patient compartment. The lights must be screwed through tapping plates embedded in the fiberglass head liner. The overhead shall have two levels of intensity, high and low settings. The attendant shall be able to control the level of light via switches in the action area control panel. The dual lighting shall work together or may be separately selected from side to side. The four lights over the primary patient shall illuminate on the low setting when the side modular or rear modular doors are open.

---

Certification shall be provided by an independent testing laboratory with this proposal.

---

Twelve volt direct current incandescent light with integral switch shall be provided in the attendant action area. The light shall be a Xantech 105-500, ( or approved equal).

---

One switch shall be located in action area for 5 inch, Xantech light, ( or approved equal) that is mounted below action area switch panel. The switch shall be wired master hot. One switch shall be located in action area switch panel for two LED dome lights mounted in headliner. The switch shall be wired constant hot.

---

Two LED dome lights IATS shall be located in module headliner. There shall be a rocker switch located in action area switch panel and it shall be wired constant hot

---

Lighting for exterior storage compartments shall be accomplished utilizing low wattage, factory sealed, recess mounted lights, activated by standard

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

automotive plunger and sleeve type self adjusting door jamb switches. The switch must be protected from corrosion by a anticorrosive lubricant applied to the contacts. Documentation of switch corrosion protection shall be submitted with this bid. The use of magnetic switches shall not be used or proposed.

\_\_\_\_\_

Magnetic switches are susceptible to transient voltage fluctuations that may be present from some OEM or add on circuits that may damage the switch rendering the compartment light and "door ajar" circuit inoperable.

\_\_\_\_\_

A hand held spotlight shall be provided with a minimum of one hundred thousand candle power lamp. It shall be in a corrosion proof housing with a protected momentary switch to prevent accidental activation. A minimum eight feet of heavy duty coiled cord will be supplied and it shall be hard wired in the cab area and accessible to the driver and passenger.

\_\_\_\_\_

An additional Peterson 4" clear compartment light shall be installed in each of the following locations:

The compartment lights shall be wired for high intensity.

\_\_\_\_\_

- One in curbside step well.
- One in compartment "B1."
- One in compartment "D"
- One in compartment "E".
- One in compartment "F".

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

A small light with a switch shall be installed in the circuit board area for troubleshooting. The light shall be wired battery hot.

\_\_\_\_\_

An 8 inch analog 12/24 hour clock shall be installed on upholstered panel, above rear patient entry doors. It shall be powered by an internal battery.

\_\_\_\_\_

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

**OTHER ITEMS**

**OTHER ITEMS**

Patient compartment headliner shall be one piece fiberglass, manufactured by the primary manufacturer, with removable center panel to access to wiring in patient area. The headliner shall run from the top of the rear doors forward to the bulkhead. The headliner shall be gel coated white. The fiberglass shall be applied with a high pressure chop gun, rolled and then hand lay with matting. The matting shall be coated with chop and rolled. The sides shall be trimmed and wood stiffeners fiber glassed into place. It shall be secured to the roof ribs of the vehicle to prevent sag and shall be contoured so as to eliminate gaps between the patient and driver compartments.

---

Interior patient compartment head liner (ceiling) shall be constructed of fiberglass with no visible seams. The use of non hardened material for the headliner is not acceptable due to the risk of cutting and bio fluid infiltration.

---

Headliner shall contain the main wiring harness service raceway, IV hooks, and over head grab rail and over head lighting. The head liner shall be smooth and white in color. All hardware attached through the head liner shall be tapped into an aluminum plate of 6061 T-6 alloy.

---

A suction pump shall be installed that shall comply with Federal Specifications KKK-1822-E.

---

The primary manufacturer shall supply an insulating material that is non flammable with a Class A, Class 1 fire rating. It shall be certified to meet the smoke and flammability requirements of FMVSS 302. The exposed walls of the exterior compartments and wheel wells that intrude into the interior of the modular shall be covered with reflective insulating material with a value of R-14. The side, front, rear, walls as well as the ceiling shall also be insulated with a reflective insulating material. The reflective insulation shall

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

include a foil lining on each side with a double layer of bubbles sandwiched between.

---

An overhead grab rail shall be installed in the patient compartment head liner. The grab rail shall be powdered coated safety yellow with rounded ends. The grab rail shall be a minimum of 117 inches long and shall be mounted in a recess in the liner.

---

On each entry door there shall be an L shaped grab handle. The vertical portion of the L shall be close to the hinge of the door and run the full length of the upper window in the door. The horizontal portion of the L shall be located just under the upper window. The grab handles shall be 1 inch diameter powdered coated safety yellow and handicapped style.

---

Grab handle shall be located on passenger side of module, next to curbside door.

---

Ambulance shall be equipped with an on board vacuum aspirator. The unit shall be mounted on the action area wall above the action area tray to collect any bio fluids that may be spilled. The unit shall be an SSCOR 22000 with a stainless steel container holder. The container shall be disposable and the regulator panel shall be located in the action area panel. The vacuum pump shall be installed via a twelve volt direct current system. The on/off switch shall be located in the attendant's console.

---

A brushed stainless steel kick plate shall be installed on the side of the squad bench and shall run the full length of the squad bench.

---

Kick plate shall provide protection to the squad bench cabinet.

---

A three inch white reflector shall be installed on lower outside corner of interior panels on all compartment and entry doors.

---

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

All vertical edges of cabinets shall be of a radius/rolled finish design to free the interior of the patient's compartment of all sharp edges or projections. The face of the cabinets shall be covered by a commercial grade laminate and adhered to the cabinet face by high quality commercial grade glue. The upper two-thirds of the cabinets shall be Dove Gray and the lower third shall be Pewter Brush. There shall be no voids of glue between the laminate and the cabinet surfaces. The laminate shall be applied and glued to the radius corners by mechanical means to insure a uniform appearance. The use of any type of molding installed on a ninety degree corner will not be accepted.

---

Interior of the patient compartment shall provide but not be limited to a minimum volume of thirty cubic feet of enclosed cabinets. Interior cabinet, shelf and compartment space shall be conveniently located for medical supplies, devices or other equipment. All interior cabinets shall be fully lined inside with high pressure plastic laminate. The equipment and supplies necessary for airway management shall be within easy reach of the medic at the head of the stretcher. Interior cabinet dimensions are as described.

---

Interior cabinets, interior walls, squad bench assembly and doors shall be constructed of wood; due to the product's ability to be customized to fulfill the needs of this agency, the additional acoustical and thermal insulation properties, reparability, and the safety factor of not producing sharp fragments or shards in the event of a serious collision. The walls, squad bench, and cabinet face shall be constructed of three quarter inch marine grade plywood. The interior cabinets shall be constructed of one half inch marine grade plywood. The rear wall of the cabinet shall be one quarter inch luan. All compartment shelves shall be one half inch marine grade plywood and all interior cabinets, squad bench and shelf surfaces and edges shall be covered with a high grade plastic laminate. The squad bench lid shall be constructed of three quarter inch birch. The lid shall be attached to the squad bench

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

assembly via a stainless steel piano hinge the entire length of the bench. The squad bench shall be equipped with a locking device to automatically secure the lid upon closing.

---

Patient compartment floor covering shall be a heavy duty material that is impervious to fluids. The flooring shall be glued to the plywood floor using an adhesive compound. The flooring shall be Lonplate II and the color Gunpowder Gray #424. There shall be no adhesive voids between the flooring and the plywood.

---

Floor shall be designed to roll up the side of the street side and bulk head cabinets and squad bench.

---

Seating for the attendant shall consist of an EVS with a child seat. The seat covering shall be an easy clean vinyl material. The vinyl shall be gunmetal gray. Seating must meet OSHA regulation 1910.1030. The seat shall be mounted on an EVS metal storage cabinet reserved for optional electrical equipment and shall be equipped with a seat belt for the occupant of the seat. The seat belt shall be secured to the cabinet as well as the floor. The seat belt must be certified to KKK - A1822 - E specification and to FMVSS. Installation shall comply with FMVSS.

---

A diamond plate door shall be installed on the EVS seat base. It shall be hinged on the bottom and shall be vented to dissipate heat from inverter/charger.

---

Finish of the entire patient's compartment, including storage cabinets and equipment, shall be impervious to soap and water, disinfectants, bio fluids, mildew and shall be fire resistant per FMVSS 302. Upholstered cushions shall be a minimum of thirty two ounce nylon reinforced commercial vinyl material. Squad bench cushions and attendant seat and backrest cushions shall be fabricated in such a manner to eliminate exposed welting. Cushions with welting or beaded seams shall not be accepted due to the risk of bio fluid penetration. Describe below your

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

method of cushion construction. The color of the upholstery shall be gunmetal gray.

---

A cabinet shall be installed above the curbside entry door to hold three boxes of gloves. Each glove box shall be accessed through a hole in a Lexan flip up door. The boxes shall be replaced by lifting up the door.

---

Bulkhead sliding door shall have at least a 150 square inch transparent, shatterproof viewing panel in the center section at the driver's eye level. The door shall be secured with a driver's side self-latching device in the open and closed positions.

---

**RIGHT FRONT CABINET**

**RIGHT FRONT CABINET**

Right front cabinet shall house the Heating and Air Conditioning unit. The intake vent shall be located in the lower left corner of the cabinet. The air shall blow out of a vent located in the upper portion of the cabinet.

---

RF/E1 cabinet shall have an inside access only, with no door. Opening shall be trimmed in aluminum. The height of this cabinet shall be from top of RF/E2 cabinet and top of pure air intake vent to bottom of pure air exhaust vent. It shall have a 1.5" high lip at bottom of cabinet opening to inside of unit.

---

RF/E2 cabinet shall be approximately 29" high and shall have an inside access only, with a single wood door, hinged on left side. It shall have a sweep-out floor to inside of unit. It shall be used to store a drug box.

---

There shall be a small horizontal style between RF/E1 and RF/E2 cabinets.

---

Note: Drug box measurements are approximately, (19" long x 11" wide x 11" high.)

---

The RF/E2 cabinet shall have a single wood door

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

hinged on the left side of the cabinet. The door shall be manufactured from 3/4 inch marine grade plywood and be covered in color coordinated high pressure laminate. The door shall be mounted flush with the cabinet opening.

---

The right front cabinet shall not have any doors. The opening shall be trimmed with an aluminum extrusion.

---

A plunger roller latch shall be installed on the right front cabinet doors to keep them secure during transit.

---

A lever latch shall be installed on EVS seat base.

---

A hasp padlock shall be installed on RF/E2 cabinet door.

---

A lever latch shall be installed on electrical access cabinet door.

---

**SQUAD BENCH CABINET**

**SQUAD BENCH CABINET**

Squad bench cabinet shall be located on the curb side of the patient compartment over the rear wheel well. The squad bench shall be a minimum of 72 inches long and be constructed of three quarter inch birch. A raised cabinet shall be manufactured and installed at front of squad bench. It shall have a sharps access hole in top of cabinet and a pull out drawer, facing street side cabinets for removal of bio-waste containers. The front lid shall be attached to the squad bench assembly via a stainless steel piano hinge. The hinge shall attach with fasteners in a vertical position through the face of the lid and not through the edge of the cabinet and lid. The rear lid shall be fixed over B1 compartment.

---

The squad bench shall be equipped with a locking device to automatically secure the lid upon closing. The squad bench shall be furnished with three sets

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

of lap safety belts for seated occupants and for the retention of a cot when positioned on the squad bench. The anchorages for the side facing seat belt assembly shall withstand a minimum of 2,500 pounds force when tested in accordance with FMVSS 210-S5.1. Two cushions shall be installed on the squad bench lids and on the wall as a back rest. The interior of the squad bench shall provide storage.

---

Squad bench shall have two lids, split 50/50, manufactured from three quarter inch birch. The front lid shall be hinged and the rear lid shall be fixed over B1 compartment. The lid shall be covered in color coordinating high pressure laminate.

---

Squad bench lid shall be secured with a paddle handle that latches automatically when the squad bench lid is closed. The latch shall hold the lid secure during transit and shall not open unless the handle is lifted.

---

When the squad bench lid is lifted, it shall be held in place by a 30 pound pneumatic hold open.

---

**STREETSIDE CABINETS**

**STREETSIDE CABINETS**

Cabinet "M" shall be located on the street side of the patient compartment. It shall be the middle cabinet just below cabinet "J2" and shall be approximately 18.75 inches high, 22 inches wide, and 17 inches deep.

---

Cabinet "N" shall be located on the street side of the patient compartment. It shall be the middle cabinet just below cabinet "J2" and shall be approximately 18.75 inches high, 22 inches wide, and 17 inches deep.

---

Cabinet "O" shall be located on the street side of the patient compartment. It shall be the middle lower cabinet just below cabinet "M" and shall be approximately 18.75 inches high, 22 inches wide, and 17 inches deep.

---

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Cabinet "P" shall be located on the street side of the patient compartment. It shall be the middle lower cabinet just below cabinet "N" and shall be approximately 18.75 inches high, 22 inches wide, and 17 inches deep.

---

Cabinet "J2" shall be located on the street side of the patient compartment. It shall be the rear upper cabinet just above cabinet "M" and "N" and shall be approximately 14.25 inches high, 40 inches wide, and 12.25 inches deep.

---

Cabinet "L1" shall be located on the street side of the patient compartment. It shall be the forward upper cabinet just above the action area and shall be 14.25 inches high, 44 inches wide and 14.5 inches deep.

---

**COMPARTMENTS AND CABINET DESIGN**

**COMPARTMENTS AND CABINET DESIGN**

All storage cabinets shall be easily opened but shall not come open during transit. The cabinets shall be accessible through a reciprocating horizontal sliding Lexan door. The door shall be transparent to permit viewing of supplies and the door shall open with a grab anywhere device. The handle shall run the full vertical length of the Lexan. The Lexan shall be three sixteenths of an inch in thickness and shall be enclosed in an extruded aluminum frame. The frame shall cover the entire perimeter of the cabinet opening and the Lexan set within the frame on a track lined with a material to prevent the Lexan from sliding open and shut during transport.

---

The door to cabinet "M" shall be a Lexan slider. The Lexan shall be clear.

---

The door to cabinet "N" shall be a Lexan slider. The Lexan shall be clear.

---

The door to cabinet "O" shall be a Lexan slider.

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

The Lexan shall be clear.

---

The door to cabinet "P" shall be a Lexan slider.

The Lexan shall be clear.

---

Action area cabinet shall have a one piece poured counter top with a one inch lip around the tray. The tray is mandatory to facilitate cleaning and contain any fluids or biological waste during transit. The action area shall provide for easy access to switches located in the action from the attendant seat, squad bench and CPR seat, if applicable. The switches shall be located in an angled cabinet on the back wall of the action area.

---

Top of the action area cabinet shall provide a clean work area. The countertop shall be one piece with a one inch lip around the tray. The tray shall be a one piece poured counter top, no exceptions. This tray is mandatory to facilitate cleaning and contain any fluids or bio.

---

Door to cabinet "J2" shall be a Lexan slider.

The Lexan shall be clear.

---

Door to cabinet "L1" shall be a Lexan slider.

The Lexan shall be clear.

---

**RESTRAINTS/HOLDERS**

**RESTRAINTS/HOLDERS**

Patient restraints shall be as specified in paragraph 3.11.8 of Federal Specification KKK-A-1822E revision

---

Cot fasteners and safety bets shall be mounted in tapping plates. The cot fastener shall be a Stryker 6360-30-10, ( or approved equal)

---

There shall be cot plates under each wheel of the cot to prevent marks on the floor of the patient compartment. The cot plates shall be manufactured of brushed stainless steel, fastened to the floor with counter sunk screws and the edges shall be sealed with

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

silicone to prevent fluids from seeping under the plate. \_\_\_\_\_

IV holders for intravenous fluid containers shall be as specified in paragraph 3.11.9 of Federal Specification KKK-A-1822-E revision.

\_\_\_\_\_

There shall be four Cast fold down style recessed IV holders. Two shall be located on the curbside at the head and foot of the cot, and two shall be located on the street side at the head and the foot of the cot.

\_\_\_\_\_

A cargo net shall be installed on the RF/E1 cabinet to secure equipment during transit. It shall be manufactured with 1" wide BLUE nylon webbing with a maximum of 6" spacing between webbing connections. It shall have quick release latches w/chrome footman loops that shall be mounted on inside walls of cabinet next to cabinet opening.

\_\_\_\_\_

**OXYGEN**

**OXYGEN**

The oxygen cylinder rack shall be constructed from steel tubing with a wall thickness of 0.125 inches and shall hold an "M" tank. The rack shall be painted with a Zolotone paint and shall be located in compartment F.

\_\_\_\_\_

Oxygen cylinder rack shall include two stainless steel retention straps for securing an aluminum "M" oxygen cylinder. The compartment will be designed with a sweep out floor to facilitate loading and unloading.

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One cylinder strap shall be installed approximately 8 inches from the compartment floor to the center of bottom strap. One cylinder strap shall be installed approximately 24 inches from compartment floor to the center of top strap.

\_\_\_\_\_

Ambulance shall have a hospital type piped oxygen system capable of storing and supplying three thousand liters of medical oxygen. The cylinder controls shall be accessible from inside the patient

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

compartment. The pressure gauge shall be visible from either the attendant's seat or from the squad bench. The oxygen shall be piped to two self sealing Ohio adaptable oxygen outlets located in the action area and one located on the curbside wall at the head of the squad bench. There shall be an electric oxygen switch, wired ignition hot, located in the action area that shall engage a solenoid to open and close a valve on the oxygen tank. It shall also include a manual bypass knob in the action area in the event of an electric oxygen malfunction. The oxygen system will incorporate electrically conducted oxygen hose with a working pressure of one hundred and fifty pounds per square inch. All oxygen hose and outlets will use machine crimped brass ferrules and high pressure connectors. The entire oxygen delivery system will be pressured tested with a minimum of one hundred and fifty pounds per square inch of pressure of nitrogen gas for a period of four hours. The testing documentation will be delivered with the vehicle. A vacuum port shall also be located in the action area to supply the vacuum to the suction container.

\_\_\_\_\_

An oxygen wrench shall be located in the oxygen compartment. The wrench shall be tethered so that it will not become lost

\_\_\_\_\_

A plexiglass door shall be installed on the oxygen viewing opening.

\_\_\_\_\_

**STANDARD MANDATORY**  
**MISCELLANEOUS EQUIPMENT**

**STANDARD MANDATORY**  
**MISCELLANEOUS EQUIPMENT**

One five pound fire extinguisher that is ABC dry chemical multipurpose with a quick release bracket.

\_\_\_\_\_

No smoking oxygen equipment signs conspicuously placed in the cab and patient compartment supplied loose.

\_\_\_\_\_

A back up alarm, audible warning device activated when the vehicle is shifted into or moving in reverse

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**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

Fire Extinguisher, 5 Lb. ABC, supplied loose

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Decal, DOT Package, with a White Border, supplied loose

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Two (2) flow meter, 0-15LPM, w/ohio adapter

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One (1) regulator, large cyl, preset 50 psi

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Primary manufacturer or dealership shall provide a local service facility within 60 miles of Roanoke, Virginia and it shall operate during regular business hours and shall have factory trained technicians to repair equipment

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Local Service Facility Location

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**QUALITY ASSURANCE PROVISIONS**

- A. 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 written approval of the purchaser. Construction methods utilized shall be in accordance with industry standards. Component parts and units shall be manufactured to definite standard dimensions with proper fits, clearances and uniformity. The general appearance of the vehicle shall not show any evidence of poor workmanship.
- B. At the time of delivery, the manufacturer's representative shall explain the use and operation of the new vehicle(s) and provide an owner's manual for the complete vehicle. The manual shall contain useful information on routine maintenance and trouble shooting. All warranty registration materials shall be completed and explained at the time of delivery. The manufacturer shall arrange for over the road delivery under the finished vehicle(s) own power. The vehicle(s) shall be delivered clean and free of road debris with at least fifty percent fuel on board.
- C. Bidder shall be responsible for the performance and test requirements required herein. The City reserves the right to perform any of the inspections and tests set forth in these specifications where such inspections are deemed necessary to assure conformation of specification. The primary manufacturer shall conform to City's representatives with instruments and all such assistance as may be required.

**CUTAWAY VAN CHASSIS WITH MOUNTED MODULARIZED AMBULATORY**

**BODY**  
**(Continued)**

**CITY SPECIFICATIONS**

**DEALER SPECIFICATIONS**

- D. The primary manufacturer shall be ISO 9001:2000 certified.
- E. The primary manufacturer is obligated to prove that the vehicle, ambulance components and equipment provided meet the requirements of this specification and are compliant to Federal Ambulance Specification KKK - A - 1822E and any amendments in effect at the time of this bid. Copies shall be provided with this of the test documents and a letter from a independent testing laboratory that has performed the tests certifying that the following tests have been conducted and passed. Test documents or any source other than described above shall not be accepted. Failure to comply with the requirement shall be considered as non-responsive and will not be accepted. The certified tests are as follows and conform to the requirements of this specification and Federal Ambulance Specification KKK - A - 1822E.
- F. Bidder shall provide any warranty information for chassis and body.
- G. Successful Bidder shall schedule with Demond Hammond, Project Specialist, (540) 853-5461 and provide an "on-site" operator training and a technical "hands-on" mechanic training for shop mechanics

**BODY VENDOR SHALL COORDINATE WITH TRUCK (CAB/CHASSIS)**  
**VENDOR TO ENSURE COMPATIBILITY OF ALL PARTS AND APPLICATIONS**

**COMPLETED UNIT SHALL BE INSPECTED AND HAVE IN PLACE A**  
**CURRENT, VALID VIRGINIA STATE INSPECTION STICKER AND BE READY**  
**TO BE PLACED INTO SERVICE WHEN DELIVERED TO**

**City of Roanoke**  
**Fleet Management**  
**1802 Courtland Avenue, NW**  
**Roanoke, Virginia 24012**