

**THE METRO FIRE AGENCY**  
**SPECIFICATIONS AND**  
**INSTRUCTIONS TO BIDDERS**  
**FOR A REQUEST FOR PROPOSAL**

**TYPE 1**  
**FIRE DEPARTMENT AMBULANCE**

**BID NO. 8107**

**I. REQUEST FOR PROPOSAL**

The Metro Fire Agency is seeking a request for proposal from qualified bidders to furnish new ambulances as described in the attached specifications. It is the intent of these specifications to describe a well-designed, adequately engineered ambulances. Said ambulances must be suitable for its intended use with the jurisdictions that make up the Metro Fire Agency. These jurisdictions will purchase only equipment which is manufactured by a reputable, proven equipment company with demonstrated ability to provide technical advice and repair parts throughout the life of the equipment.

**II. BID SECURITY REQUIRED**

The Midvale City Recorder shall act as the agent for the Chairman of the Board of Trustees of the Metro Fire Agency in this process.

All bidders must provide a bid security, in an amount equal to 5% of the total bid amount, at the time of the bid opening. Said bid security shall be in one of the following forms:

1. A bid bond provided by a surety company authorized to do business in the state of Utah; or
2. A bank cashier's check.

All bid securities will be held by the Midvale City Recorder until the contract award has been determined in writing. Upon award, the bid securities of bidders who were unsuccessful in securing the bid will be returned if they were in the form of a check. The bid security of the successful bidder will be held until such time as its useful purpose has been served.

**NOTE:** Any bidder desiring to withdraw his/her bid after the bid opening, may do so only upon forfeiture of the full amount of the bid security.

**III. BONDING REQUIRED**

The selected contractor must deliver a Performance Bond and a Payment Bond to the Midvale City Recorder's office in a form acceptable to the Board of Trustee's Attorney, prior to award of the agreement. Said bonds shall be in an amount equal to 100% of the total bid amount. Contractor must agree to keep the bonds in force and effect throughout the entire term of the resulting agreement.

**IV. QUALIFICATION OF BIDDERS**

Bids will not be considered unless the supplier submitting the bid meets the following requirements:

1. Bidder must currently own and operate a factory which is devoted to the manufacture of the equipment which they propose to furnish. Said factory must be adequately equipped and staffed to manufacture the equipment specified herein.

2. Bidders who wish to respond to this request must be a licensed and bonded motor vehicle dealer in the state of Utah. All dealers meeting this requirement shall provide documentation to this effect. Said documentation shall include the bidder's dealer number.

**NOTE:** In the event that a bid is submitted by a distributor or bidder other than a direct manufacturer, a certificate of compliance executed by the manufacturer may be required, at the Board of Trustee's option. Said certificate shall state that the bidder is an authorized distributor of the manufacturer and that the equipment offered will be built in compliance with the specifications set forth in this solicitation.

#### **V. DELIVERY REQUIREMENTS**

1. Bidder must state the guaranteed delivery date on the face of the bid form provided. Delays other than those directly related to strikes or natural disasters will not be allowable under the terms of the resulting purchase agreement. Delivery time of each unit ordered through this agreement must be stated in calendar days.
2. Liquidated Damages: Metro Fire Agency shall deduct as liquidated damages from any money due to the vendor, an amount equal to one tenth of 1% of the accepted dealer total bid delivery price, per unit, for each and every *business* day(s) during which the contract remains unfinished or uncompleted. Any moneys deducted are not to be construed as a penalty, but as liquidated damages to compensate for additional costs and inconvenience incurred by the Metro Fire Agency. The rights and remedies provided for in these specifications shall be in addition to and not a limitation of any rights and remedies otherwise available at law. In any lawsuit involving the assessment or recovery of liquidated damages, the reasonableness of the charge therefore shall be presumed and the amount assessed shall be in addition to every other remedy now or hereinafter enforceable at law, in equity, by statute under the contract.
3. The selected unit will be driven from the factory to location that will be hereafter designated, by a factory representative. The bid must include all costs associated with transportation, meals, etc., for the driver, to and from the plant.

#### **VI. DELIVERY CONDITIONS**

It is agreed that legal responsibility for the ambulance and equipment, as well as title to the cab and chassis, will remain with the supplier and manufacturer until the Metro Fire Agency has formally accepted the unit.

1. All testing must be witnessed by a designated apparatus and equipment officer of the fire departments who have made purchases as part of this request for proposal.
2. A qualified, responsible representative of the manufacturer must arrive at the designated location with the ambulances, at the time of delivery. Said representative must stay for a sufficient time to instruct Fire Department personnel in the operation, care and maintenance of the equipment delivered (minimum of 1 day for each operations shift at no additional expense to the purchasing Agency.)

#### **VII. SUBMISSION OF BIDS**

Competitive sealed bids will be accepted in the Midvale City Records office until **Friday August 31, at 3:00 P.M.** at which time they will be publicly opened and read aloud. All bids shall contain on the title page of the bid the bid price of the manufacturer and must be signed by a representative of the company having the legal authority to bind the bidder contractually. Bidder's signature on this page of

the bid indicates bidder's agreement to comply with all terms and conditions set forth in this solicitation.

**VIII. REJECTION OF BID**

The Metro Fire Agency reserves the right to reject any and all bids, and to waive any informality, or technicality, if it is deemed to be in the best interest of the group to do so.

**IX. MANUALS**

The manufacturer must supply at least four (4) copies of the complete operation and maintenance manuals for each unit at the time of delivery. Said manuals must cover the complete apparatus **as built**, including but not limited to, the cab and chassis, maintenance, wiring, lubrication charts and all equipment.

**X. INSTRUCTION TO BIDDERS**

1. All bids must be submitted on forms provided for this purpose.
2. All bidders must complete the entire set of detailed specifications marked Exhibit "A", in order to be considered for award.
3. Bidder must also list all items which they do not intend to supply on a separate list marked "Exceptions to Bid".
4. Bidder must list separately all items, or features, not specified in these specifications, which they recommend be incorporated on the vehicle or apparatus. Prices for the item or feature must be included on the list. Each purchasing agency will have the option to accept or reject the recommendation.

**NOTICE TO BIDDERS:** Both items 3 and 4 above will be given serious consideration during the bid evaluation. Bidders must submit sufficient specifications and documentation to enable the City to intelligently evaluate said bid.

5. When completing Exhibit "A" of this solicitation, the bidder must specify, beside each item, whether or not they intend to comply with each provision of the specification. If it is the bidder's intention to substitute an item, they must clearly state what they intend to substitute.

**NOTICE TO BIDDERS:** Failure to comply with any part of these instructions will be considered just cause to declare the bidder non-responsive, thus rendering their bid ineligible for award.

6. The bid form must be signed by an authorized representative of the company submitting the bid. Signature on the form will signify agreement to comply with all requirements set forth in this solicitation, except where specifically noted in the bidder's written response. In addition, the bidder's signature on the form will indicate the following:
  - A. All data presented in the bid is accurate and reliable.
  - B. The discovery of any significant inaccuracy in the information provided by the bidder will constitute good and sufficient cause for rejection of the bid; and/or refusal to accept any unit at the time of delivery; and/or cancellation of the purchase order, without penalty to the purchasing department. All costs will be borne by the contractor.

- C. The supplier agrees to defend any and all suits and assume all liability, for any claims made for the use of any patented process, device or article forming a part of the apparatus, or any appliance furnished under the resulting purchase agreement.
- D. It is agreed that payment shall not be made until all acceptance testing has been completed by purchasing agencies personnel.

**XI. SPECIFICATIONS DESCRIPTIVE AND NONRESTRICTIVE**

These specifications are intended to be descriptive and nonrestrictive. Whenever so indicated, the specifications set forth herein indicate the minimum acceptable design and performance requirements for the equipment specified. Only equipment which meets or exceeds these specifications will be considered for award. In the event that all bidders fail to meet the minimum specifications, the Metro Fire Agency reserves the right to award to the bidder most nearly meeting its specifications, at the Chairman of the Board's option. No bidder should submit a bid that they believe meets the "*intent of the specification*". This assumption on the bidders part will result in rejection of their bid.

**XII. SPECIFICATIONS FOR BID**

1. The specifications set forth in this solicitation are intended to describe all ambulance apparatus fully equipment to perform its function under extreme and hazardous conditions.
2. Every effort has been made to include all essential items for the safety and effective operation of the equipment specified; however, it is to be understood that certain items may have been omitted due to an oversight on the part of the specification committee. Bidders are therefore required to identify such items and to include them in their bid. Bidder will submit a separate price for each item listed.
3. Minor details of construction and materials, if not otherwise specified, are left to the discretion of the contractor. The contractor shall be solely responsible for the complete design, construction and successful certification testing of the unit.
4. The ambulance will be constructed with due consideration given to the nature and distribution of the load to be sustained, the general character, type of service and the normal wear and tear to which the apparatus is to be subjected when placed in service.
5. The purchasing agency shall be notified, in writing of any changes to the design of function of any component outlined in these specifications, prior to the changes being made.
6. All parts of the ambulance will be designed and engineered to withstand emergency service and delivery.
7. The ambulance will be designed in such a manner that the various parts, which require lubrication, inspection, adjustment and repair, are readily accessible.
8. The entire ambulance must comply with applicable Utah State motor vehicle laws, in effect at the time of delivery.
9. Where special tools, not normally used or available, are required to service any part or component included on the ambulance, required special tools will be included as a part of the bid.

**XIII. BIDDER REQUIRED TO SUBMIT COMPLETE SPECIFICATIONS**

**BIDDER INSTRUCTIONS:**

The following specifications describe a new ambulance that is expected to be acquired by this purchaser. The specifications describe the needs in both chassis configuration and module body design. A state of the art ambulance is desired. However, manufacturers that utilize prototype equipment or manufacturing processes will not be considered. This history shall be supported per the following reference section. The base point for the initial configuration of this ambulance shall be in accordance with the effective KKK, Federal Specification for Ambulances. However, most requirements in this specification exceed the Federal design specification because of specific needs that are applicable to this purchaser. The following conversion specification shall designate if the vehicle is to have a Star of Life certification sticker applied.

**IMPORTANT NOTE:** The following specifications represent minimum general terms or requirements. Any bidder deviating in any substantial manner will be rejected as being non-compliant.

Finally, manufacturers or dealers for manufacturers submitting bids, shall include the following information with their proposal:

**MINIMUM REQUIRED STANDARDS:**

The highest degree of quality materials and building processes is required for the emergency medical vehicle being proposed. At a minimum, each manufacturer being proposed must meet all current mandated or voluntary ambulance design standards in effect at the date of the proposal submission. All current Federal Motor Vehicle Safety Standards (FMVSS) must be met. In addition, all current Federal Ambulance Design Standards (KKKA1822) must be met. Finally, if certification programs are offered to the ambulance manufacturer being proposed, by any chassis manufacturer utilized by the ambulance manufacturer, those certification standards must also be met. For example, Ford Motor Company offers the Qualified Vehicle Modifier program, in which numerous engineering standards and build standards are reviewed and rated. To ensure high and acceptable standards the manufacturer being proposed must be a member of this program. This applies even if a chassis other than Ford is being proposed.

**FAILURE TO MEET ANY OF THE ABOVE STANDARDS WILL RESULT IN REJECTION OF THE PROPOSAL.**

DATE OF CERTIFICATION FOR KKKA1822: \_\_\_\_\_

DATE OF CERTIFICATION FOR QVM PROGRAM: \_\_\_\_\_

Copies of above certifications/testing, documents have been furnished. Yes \_\_\_ No \_\_\_

**XIV. SINGLE SOURCE MANUFACTURER**

A manufacturer is desired that manufactures the major components for the ambulance (excluding the chassis). Major components are defined as the module shell, interior cabinets and converter added electrical system including the primary module wiring harness.

The purpose is to simplify responsibility of warranty coverage for the finished product. Converters who outsource either the module body construction or the interior cabinets or the electrical system as defined in the ELECTRICAL SYSTEM ACCESSORY requirements that proceed in this specifications, will be considered as non-responsive, and will therefore be rejected.

ABOVE REQUIREMENTS MET: Yes\_\_\_\_\_ No\_\_\_\_\_

COMPONENT MANUFACTURER (by company name)

Modular Body: \_\_\_\_\_

Interior Cabinets: \_\_\_\_\_

Converter Added Electrical System: \_\_\_\_\_

Converter Added Oxygen System: \_\_\_\_\_

**XIV. QUOTATION**

The overall quotation shall include a firm price for these specifications. The quotation shall also include a specific delivery date based on number of calendar days following awarding of contract. The model year of both chassis and conversion shall be designated.

This RFP shall remain active for the period of one (1) year from the date of the award of the contract. At that time and at the option of the Chairman of the Board of Trustee's, the contract may be extended for no longer than two (2) additional years. The prices would then be recalculated for the term of the new contract period.

The price quoted in the bidder's proposal's shall not change during the course of the contract unless it goes down. In the event of a price decrease the manufacturer shall notify the Chairman of the Board of the Metro Fire Agency or his/her designee in writing.

**XV. WARRANTY**

The proposal packet shall include all warranties that are required in the following detailed specification. 'LIFETIME WARRANTIES' will be unacceptable because of their unclear nature of duration. All warranties must have specific time duration's and shall define warranties on specific components. The minimum acceptable warranty period required is noted below. In the blank line, the bidder shall note the term of warranty that applies to the manufacturer being proposed.

MODULAR BODY STRUCTURAL WARRANTY: 15 Years/Unlimited Miles  
Proposed Warranty Term: \_\_\_\_\_ Year(s), \_\_\_\_\_ Miles

ELECTRICAL WARRANTY: 6 Years/72,000 Miles  
Proposed Warranty Term: \_\_\_\_\_ Year(s), \_\_\_\_\_ Miles

CONVERSION WARRANTY: 2 Years/24,000 Miles  
Proposed Warranty Term: \_\_\_\_\_ Year(s), \_\_\_\_\_ Miles

PAINT WARRANTY: 4 Years/48,000 Miles  
Proposed Warranty Term: \_\_\_\_\_ Year(s), \_\_\_\_\_ Miles

For verification of the completed warranty terms stated above, the bidder must include printed MANUFACTURER'S WARRANTIES that meet the minimum stated periods described above. Dealer submitted or Salesman submitted warranty claims and terms are not acceptable.

Manufacturer's Warranties Included: Yes\_\_\_\_\_No\_\_\_\_\_

Will furnish section as written: Yes\_\_\_\_\_No\_\_\_\_\_

**XVI. SERVICE**

Service will be a major factor in the award of this proposal. Convenience and experience will be determining factors in defining acceptable service. A service facility within a radius as described below will be required. Personnel performing the service shall be trained by the manufacturer, with

emphasis in the area of electrical service. In order to evaluate the proposed service facility the following information shall be filled in on the following designated lines:

Radius From Purchaser            Not More Than 50 Miles

Facility Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_

Contact: \_\_\_\_\_

Phone #: 1(\_\_\_\_\_) \_\_\_\_\_

Training Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Training Required:

Training is required on operation and owner maintenance for all Midvale Fire Department Personnel.

**XVII. SAFETY CERTIFICATION**

The verification of construction techniques used throughout the building process must be furnished by the manufacturer/bidder. The installation methods and construction techniques associated with seat belt retention, cabinet construction and installation, oxygen cylinder retention and module to chassis mounting systems must be verified through a controlled sled test that simulates an actual impact condition. This test must be performed from a minimum frontal impact condition of at least 20 g's. All testing must be performed by a testing agency, independent of the manufacturer.

As proof of this verification process being performed, the bidder must provide the following information:

Testing Facility Name: \_\_\_\_\_

Date Tested: \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

'G' Force Tested To: \_\_\_\_\_ G's

In addition to the above information, a signoff letter from the testing facility must be provided with the bid documentation. A video of the testing shall also be furnished upon request by this purchaser.

Documentation Furnished with Proposal:    Yes\_\_\_\_\_ No\_\_\_\_\_

**XVIII. SAMPLE PARTS REQUIREMENTS**

In order to compare construction techniques or parts utilization, each bidder must submit at the time of the bid opening the following items used throughout their proposed construction process and as defined in the following specification requirements:

1. (1) 8" square exterior compartment door (to include applicable insulation and all typical structural components)
2. (1) exterior compartment door hold open
3. (1) 8" long upper roof corner rail
4. (1) 8" long body side corner rail
5. (1) 8" long sub-floor channel
6. (1) 8" square interior cabinet material
7. (1) 8" long interior cabinet door track
8. (1) 9" long cab console to central electrical panel cable with connector
9. (1) solid state circuit breaker (MOSFET)
10. (1) module to chassis tie-down section, showing chassis frame, body understructure mount, rubber separators and bolts
11. (1) 4" sample letter being proposed (if required)

**XIX. REFERENCES**

The proven durability and reliability of this product is of utmost concern. Each bidder submitting a proposal must furnish references consisting of in-service units of similar chassis make and conversion processes being proposed. In addition, the electrical design on the unit being proposed must be field proven. Prototype equipment or processes will not be considered. Therefore, all references listed below must include an electrical system that has been installed for a minimum of three (3) years.

All references shall include owner, address, contact with phone number and model owned. A minimum of ten (10) references shall be furnished:

1. Reference: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone #: 1(\_\_\_\_) \_\_\_\_\_  
 Model Owned: \_\_\_\_\_ Year: \_\_\_\_\_
2. Reference: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone #: 1(\_\_\_\_) \_\_\_\_\_  
 Model Owned: \_\_\_\_\_ Year: \_\_\_\_\_
3. Reference: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone #: 1(\_\_\_\_) \_\_\_\_\_  
 Model Owned: \_\_\_\_\_ Year: \_\_\_\_\_
4. Reference: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Phone #: 1(\_\_\_\_) \_\_\_\_\_  
 Model Owned: \_\_\_\_\_ Year: \_\_\_\_\_
5. Reference: \_\_\_\_\_  
 Location: \_\_\_\_\_  
 Contact: \_\_\_\_\_

Phone #: 1(\_\_\_\_)\_\_\_\_\_
Model Owned:\_\_\_\_\_ Year:\_\_\_\_\_

6. Reference: \_\_\_\_\_
Location:\_\_\_\_\_
Contact: \_\_\_\_\_
Phone #: 1(\_\_\_\_)\_\_\_\_\_
Model Owned:\_\_\_\_\_ Year:\_\_\_\_\_

7. Reference: \_\_\_\_\_
Location:\_\_\_\_\_
Contact: \_\_\_\_\_
Phone #: 1(\_\_\_\_)\_\_\_\_\_
Model Owned:\_\_\_\_\_ Year:\_\_\_\_\_

8. Reference: \_\_\_\_\_
Location:\_\_\_\_\_
Contact: \_\_\_\_\_
Phone #: 1(\_\_\_\_)\_\_\_\_\_
Model Owned:\_\_\_\_\_ Year:\_\_\_\_\_

9. Reference: \_\_\_\_\_
Location:\_\_\_\_\_
Contact: \_\_\_\_\_
Phone #: 1(\_\_\_\_)\_\_\_\_\_
Model Owned:\_\_\_\_\_ Year:\_\_\_\_\_

10.Reference: \_\_\_\_\_
Location:\_\_\_\_\_
Contact: \_\_\_\_\_
Phone #: 1(\_\_\_\_)\_\_\_\_\_
Model Owned:\_\_\_\_\_ Year:\_\_\_\_\_

XX. LIABILITY

The bidder shall defend, indemnify, and save harmless the purchaser/agency, its officials, employees and agents from all claims, demands, payments, suits, actions, recoveries, and judgments of every description, whether or not well founded in law, brought or recovered against it, by reason of any act or omission of said bidder, his agents or employees, in the execution of the contract or in consequence of insufficient protection or for the use of any patented invention by said bidder, and a sum sufficient to cover aforesaid claims may be retained by the purchaser from money due or to become due to the bidder under this contract, until such claims shall have been discharged or satisfactorily secured. Each bidder must furnish a Certificate of Insurance showing aggregate total of insurance which shall not be less than five million dollars (\$5,000,000.00).

Certificate of Insurance Included With Proposal: Yes\_\_\_\_\_ No\_\_\_\_\_

In addition, the bidder is to assume risk of loss to the ambulance until the ambulance is delivered to accepted by the agency.

XXI. COMPLIANCE

One purpose of this specification is to ensure a finished manufactured emergency vehicle, designed to

meet the needs and concerns of this department.

The department shall have the legal right to engage an independent engineer to inspect the finished, delivered vehicle as built by the successful bidder, and compare it to the these build specifications. If inconsistencies exist, or deviations from the specifications are found, the vehicle will be refused, returned to the manufacturer, with out payment, and the cost for the independent engineer shall be the responsibility of the failed vehicle manufacturer.

**XXII. SPECIFICATION DESIGN**

The following specifications were created by the purchaser in order to best describe a need. However, it is not the intent of the purchaser to exclude any manufacturer from bidding on these specifications. Exceptions should be listed per the following BID COMPLETION requirements.

**XXIII. PROPOSAL SUBMISSION REQUIREMENTS**

1. All proposals shall be submitted in a three ring binder. In order to facilitate evaluation, the binder shall be divided by header into the following minimum sections:
  - a. PROPOSAL: Bidder's proposal showing product bid, model year, price and delivery date
  - b. SPECIFICATION: Purchaser's advertised specifications completed as requested
  - c. DESIGN: CAD generated drawings of interior and exterior of product being proposed
  - d. WARRANTY: Complete written text of Module Warranty, Electrical Warranty and Converter's Warranty

**XXIV. INFORMATION TO BE SUBMITTED WITH PROPOSAL**

The information requested in this bid packet must be furnished in full. Any bidder not completing this proposal or not furnishing any required information will not be considered. If a bidder cannot furnish a material or fabrication process, that inability must be designated in the Specification Evaluation Section of this specification. If a substitution is being proposed, whether it EXCEEDS or TAKES EXCEPTION to the specifications, technical data supported by a registered engineer must be supplied by the bidder. This purchaser has the option to require samples of any deviating material to be furnished upon request for evaluation. The data will be used to evaluate the bid.

NOTE: Failure to complete the Evaluation Section will result in forfeiture of the submitted bid.

**XXV. PAYMENT CONDITIONS**

It is understood that payment for the unit will not be made by any participating department within the Metro Fire Agency until all specifications have been met. This means that all required corrections must have been made and final acceptance tests must be completed by the participating fire departments prior to payment. It is therefore acknowledged that these Metro member departments may be in possession of the ambulance well in advance of approval for payment.

1. All testing must be completed in compliance with KKK Standards, Section 9-1 Certification Tests, or its successor.
2. In the event that the Metro Fire Agency awards a contract to a bidder to supply a Type I ambulance apparatus under this invitation for bids, it is acknowledged by the bidder's signature on the bid form that such an award requires the contractor to comply with each of the following:
  - A. The Type I ambulance specified and bid in response to this solicitation is a type previously tested and approved by the Underwriters Laboratory or approved 3<sup>rd</sup>

party testing agency. Said truck must be tested to Type 1 specification indicating the same rating and capacity as indicated by the bidder in response to this solicitation.

- B. Good road performance of the Type I ambulance will be a prime consideration in the Agency's selection process. Before final acceptance of the vehicle, the successful bidder must subject the unit to road tests, under the supervision of the Metro Fire Agency representatives, with normal quantities of fuel and normal equipment and personnel load.

**XXVI. PURCHASE QUANTITY**

Bidders are advised that member agencies may purchase as many as **ten (10)** ambulances meeting these specifications.

**XXVII. ADDITIONAL INFORMATION**

Interested parties may contact Battalion Chief Curtis Day at the Midvale City Fire Department for additional information. Telephone 801-255-4441; E-Mail at: [cday@midvale.com](mailto:cday@midvale.com).  
A public bid opening will be held on August 30, 2007 at 3:00 P.M. at Midvale City Hall which is located at 655 West Center Street, Midvale Utah.

**XXVIII. INVOICE AND PAYMENT**

Supplier shall prepare invoice and at least one of the following:

- Utah Registration Certificate
- Manufacturer's Statement of Origin (MSO)
- UCC-1
- Odometer statement

These items will be released to the Chairman of the Board of the Metro Fire Agency on or before delivery date of equipment.

**METRO FIRE AGENCY**

**REQUEST FOR PROPOSAL**

**TYPE 1**

**FIRE DEPARTMENT AMBULANCE**

**EXHIBIT “A”**



**REAR AXLE:**

-Ratio: 4.88:1 limited slip

**OVERALL WEIGHT RATINGS:**

-GVW: 16,000 lbs.  
-Front Axle: 7,000 lbs. Monobeam, Dana  
-Rear Axle: 12,000 lbs. Full Floating, Dana  
-Front Springs: 7,000 lbs. Combined Rating @ Ground  
-Rear Springs: 12,000 lbs. Multi-Leaf Single Stage Combined Rating @ Ground  
-Shock Absorbers:1.38" Front and Rear, Heavy Duty Gas Type  
-Stabilizer Bar:1" Diameter, Front; 1.25" Diameter, Rear

**TIRES AND WHEELS:**

-Quantity of seven (7) tires with spare shipped loose.  
-Tire size to be 225/70R19.5 Load Range 'F'  
-Tires shall be all season radials  
-Steel wheels

**BRAKES:**

-Front:14.53" Diameter Hydraulic Disk, Dual Piston Pin-Slider Caliper  
-Rear:15.35" Diameter Hydraulic Disk, Dual Piston, Pin-Slider Caliper  
-Power Assist: Hydro Boost  
-Parking Brake: Foot Operated, hand release  
-ABS: Four Wheel-Three Channel

**INTERIOR APPOINTMENT STANDARDS:**

-Power steering  
-Tilt steering with factory speed control  
-Dual padded sun visors  
- Factory Gauges for Oil Pressure, Fuel Capacity, Water Temperature and Converter added **Digital** Display for Converter added Ammeter and Voltmeter  
-Power door locks  
-Power windows  
-Power/Heated mirrors with clearance lights  
-Two 12V power points  
-Adjustable gas and brake pedals  
-Heat/Air conditioning

- Dual O.E.M. cloth-covered captain's chairs with inside folding arm rests
- Rubber floor covering
- Second generation driver and passenger air bags.
- An AM/FM stereo/CD player with two (2) speakers installed in cab.
- Factory gauges for oil pressure, fuel capacity, and water temperature.

**ADDITIONAL APPOINTMENT STANDARDS:**

- XLT trim package
- Tinted glass
- Dual electric horns
- Interval wipers
- ICC lights
- Halogen jewel effect headlights
- Daytime running lights
- Sound reduction package
- Chrome-plated front bumper
- Auxiliary idle control
- Auxiliary heat/AC connections
- Front license plate bracket
- Cab steps
- Under hood service light
- Two front tow hooks.

**BATTERIES:**

The vehicle shall be equipped with two (2) 750 cca batteries located in the OEM location under the chassis hood.

The total cca rating for this vehicle shall be 1,500 cca.

**BATTERY HEAT SHIELDS:**

Battery heat shields will be provided and installed for all batteries located beneath the hood.

**ALTERNATOR**

Dual 130 amp O.E.M. Motorcraft alternators shall be installed by the chassis manufacturer. These alternators shall be internally regulated.

**CHASSIS INTERIOR COLOR:**

The chassis interior shall be O.E.M. gray.

**CHASSIS HARDWARE AND ACCESSORIES:**

The items to follow represent chassis modifications, hardware, and accessories that are required.

**WHEEL INSERTS:**

Polished stainless steel DOT approved wheel inserts shall be installed on all four outside wheels of the chassis. The rear wheels shall include braided stainless steel filler extensions. The extensions shall be fastened to the center wheel hub with stainless steel brackets. Designs that do not incorporate the filler extensions will be unacceptable as they hinder inflation of the inner tire.

**MUD FLAPS, REAR:**

The vehicle converter shall install individual black heavy duty rubber mud flaps behind each rear wheel.

**DIAMOND PLATE RUNNING BOARDS:**

Diamond plate running boards shall be installed on each side of the cab at the cab entry points. The running boards shall be .125" thick 3003-H14 alloy polished aluminum diamond tread plate. They shall include a splash shield at the forward end to protect the vehicle from spray and road debris.

An expanded aluminum tread plate insert shall be installed in the step for better traction.

IMPORTANT!! The running boards will be a WIDE design -- The horizontal step surface shall be tapered to the full width of the module body.

**REAR STEP/BUMPER ASSEMBLY:**

The rear of the vehicle shall be equipped with a step/bumper assembly to be fabricated from .125" polished aluminum diamond Tread plate. The assembly shall be spaced out from the rear kick plate a minimum of 1.5". The center section of the assembly shall pivot up and over center on two (2) .5" bolts to stay in the 'up' position. This section shall be a minimum of 9.5" deep and shall be constructed with grip-strut on the stepping surface to provide for better footing. The ends of the assembly shall be fixed diamond tread plate.

The distance between the top of the step and

the ground shall not be less than 16". The fold-up portion of the step shall be firmly held down with two (2) pin and socket holders to prevent rattling while the vehicle is in motion.

**RHINO PUSH BAR/GRILLE GUARD, CENTER SECTION:**

The vehicle shall include chrome plated Rhino push bar/grille guard installed on the chassis. The guard shall include the center section only.

Wrap-around headlight guards are not required.

**MIRROR: OEM**

The mirror set shall be OEM supplied, and installed by the chassis manufacturer.

**LINK ULTRARIDE REAR AIR SUSPENSION WITH AIR DUMP:**

The vehicle shall include a Link air ride system installed in the rear suspension. The system shall include an air dump feature, wired through the left rear entry door magnetic switch, to lower the rear of the vehicle for cot loading.

**AIR SUSPENSION OVERRIDE SWITCH:**

A manual air dump override switch shall be installed as noted below. This switch shall override the air dump activated by opening of the left rear patient compartment entry door.

Switch Location: Rear door area

**REVERSE ALARM:**

An audible alarm shall be installed to activate when the vehicle is placed into reverse gear.

There shall be, installed on the front console and wired through the vehicle electrical system, a momentary cutoff switch to disable the alarm. This switch shall automatically reset each time the vehicle is placed into reverse gear.

**AM/FM/CD PLAYER:**

The OEM AM/FM/CD player shall be installed in the cab and wired to the OEM cab speakers.

**CONVERSION:**

The following section describes the required body design, manufacturing process, and materials. Adherence to this section is of extreme importance to this purchaser due to space requirements and safety concerns. The bidder must meet this section as closely as possible without utilizing experimental or prototype designs in order to be considered for bid award.

**MINIMUM BODY DIMENSIONS:**

The completed vehicle shall have the following minimum dimensions:

(Exterior)

- Height: 92"
- Width: 96.25"
- Length: 157"

(Interior)

- Height: 72"
- Aisle 48"
- Length: 153"

OVERALL DIMENSIONS (Including Chassis, Module and Step):

- Height: 115" (to top of vent)
- Width: 100"
- Length: 291"

**MODULAR BODY STRUCTURAL DESIGN REQUIREMENTS:**

The module body shall be designed and fabricated with the following key elements in mind:

1. The greatest possible load carrying capacity is desired.
2. The safety of all vehicle occupants is of paramount concern.
3. The body design, including construction materials and fabrication techniques shall be proven to be durable.
4. The body shall be easily retrofitted to a new chassis should that need ever arise.

With these concerns in mind the following requirements have been established for the purposes of this specification:  
 The vehicle converter shall design and construct its own module bodies, and maintain an engineering staff at its manufacturing facility to handle any custom body changes that may be necessitated by this design.  
 It is the intent of this purchaser to receive a finished product of the highest standards of quality available. Vehicle manufacturers who design and build their own bodies and who have the expertise of an engineering staff will possess a greater capacity as far as handling a custom project of this type than manufacturers who purchase their bodies from an outside vendor. Accountability and quality of the design will rest solely with the vendor.

**GENERAL BODY DESCRIPTION:**

The manufacturer shall provide a complete description of the body construction materials and methods for approval by the fire department as part of their proposal. That description shall describe in detail the materials used and the methods of construction that will be employed to assemble the body/module of the unit that is proposed. The product described shall be the "top of the line" body/module currently being produced by the manufacturer.

**PAYLOAD REQUIREMENTS:**

The vehicle payload shall meet or exceed that called for in the current KKK-A-1822 specification. The vehicle manufacturer shall, upon notice by the Midvale City Fire Department, provide a written statement from an independent engineer that the model being offered has met this set of criteria. Before delivery of the completed unit the manufacturer shall weigh the vehicle. A written statement of those weights shall be affixed to the inside of the street side front #1 compartment door.  
 The Metro Fire Agency reserves the right to have the finished vehicle weighed independently upon delivery. If it is found that the written statement of weight provided by the manufacturer is inaccurate beyond what may be reasonably explained as a slight difference in the calibration of the scales,

then the vehicle will be rejected. It should be noted that this purchaser, while interested in attaining the greatest possible payload, is unwilling to compromise on the structural requirements of a strong, durable, and safe body. All bidders must understand these factors supersede concern over payload, and that the lightest body (greatest payload) will not necessarily be deemed sufficient to meet the stringent quality and safety requirements set forth herein.

**MODULE BODY CONSTRUCTION AND WARRANTY:**

The choice of materials and the design shall allow the manufacturer to warrant the materials and workmanship of the module body for a period of fifteen (15) years as set forth in the warranty section of this specification.

The manufacturers structural warranty shall specifically cover:

- The continued and correct alignment of both compartment and access doors.
- Seam or joint separation in door construction.
- Aluminum interior cabinetry.

The warranty shall be fully transferable to a new owner should the vehicle ever be sold. In addition, should the manufacturer bidding this proposal re-chassis the vehicle within the period of the initial structural warranty, then an additional 5 years shall be added to the remaining amount of warranty coverage left at the time of re-chassis.

This warranty shall be revalidated in five-year increments each time the body is mounted to a new chassis provided that the warranty has not expired.

**BODY STRUCTURE:**

The body structure must be able to support the loaded weight of the vehicle in the unlikely event of a rollover. A structure is required that will enhance the safety of both patients and attendants in the event of an accidental collision.

The manufacturer shall provide a complete description of the materials and processes that will be used in the construction of the entire module.

That description should include frame design, extruded components, wall thickness of all tubing, floor and roof design, front and rear body construction, and body skin. Any special welding processes should be included for comparison.

The materials selected for the body skin shall be of the highest grade and strength aluminum available to provide for the vehicle's expected heavy-duty use and good wear characteristics.

**EXTERIOR BODY PANELS:**

The thickness required for exterior body panels is:

- Side, front, and rear walls: .125
- Ceiling and floor panels: .090

Note: The roof shall be constructed with a single sheet of 5052-H34 .090 thick aluminum. This one-piece construction is preferred over a multiple piece design. The roof shall incorporate a 3/8 crown designed to allow water to drain.

**FLOOR CONSTRUCTION:**

Floors that are uneven or are incapable of adequately supporting the load being carried on the vehicle are unacceptable. For that reason thin floor panels and/or a lack of floor supports are not desirable. To prevent buckling, sagging, oil canning or any other structural breakdown of the flooring system a detailed description of the required construction process shall be provided.

**A wooden floor deck is not acceptable.**

A complete description of materials used, their thicknesses, and construction design for the floor of the module shall be provided for review and approval by the fire department.

All beams shall be strategically located at the load bearing points of the floor and welded into place. The interior of this vehicle shall contain no wood or wood products of any kind.

The sub floor, above the aluminum sheet shall be specially constructed to provide both acoustic and thermal protection for the patient interior.

A complete description of the floor construction shall be provided.

A high quality commercial grade vinyl flooring shall be affixed to the top of the composite sub floor. The resultant sub floor shall have no organic, wood ,or wood products and shall be guaranteed against rotting or water absorption for a minimum of fifteen years.

**SKIN TO SUPPORT ATTACHMENT:**

A complete description of the body skin and support mechanism shall be included in their proposal.

Any attaching mechanism must provide for the most durable bond possible. If welding is used as part of the attachment system, this description shall also be included. The welding shall be accomplished in such a way as not create any measure of heat distortion of the body panels and lessen the overall quality of the finished appearance or creating any distortion without damaging the structural integrity of the module.

**STRUCTURAL INTEGRITY VERIFICATION:**

Structural integrity, as stated elsewhere in this specification, is of extreme importance to this purchaser. As such, it is required that the manufacturer maintain a program of simulated crash tests. The manufacturers Hygee sled testing program must be current and have been maintained on a continuous basis for a period of time not less than ten years. In addition, the sled testing shall have subjected a body, built to the above-written specifications, to a minimum of 30 g's in both side and frontal impact conditions. Neither photographs of vehicles that have been involved in accidents, nor statements or observations relevant to an accident, be it from a customer or a manufacturers representative, shall suffice as a substitute for this requirement. The sled testing must take place in a controlled environment whereupon meaningful engineering data can be gathered and applied to the structural design of the module body.

**MODULAR DOOR DESIGN:**

The door facing and edges shall be formed from a single sheet of aluminum.

The aluminum used for the doors shall not be less than 5052-H34 alloy. The material shall

be .125 thick. All module doors shall be flush fit to the body side.

The door panels must be welded at the corners.

**INNER DOOR REINFORCEMENT:**

Each door shall include an internal extrusion for added reinforcement. The extrusions shall extend around the entire perimeter of the door.

Additional reinforcement shall be installed through the center of the door and around each window where applicable. In addition to the extrusions reinforcing each outer door pan, the extrusions themselves shall be reinforced through a dual joining method. First, each mitered corner, where the frame corners join, shall be fitted with a one-way solid aluminum insertable key. This key shall prevent the corner from pulling apart, and shall act as a solid aluminum internal gusset.

Secondly, each corner where the frame joins shall be welded to further prevent any separation. The end result will be a rigid door that will not bend or flex and that will eliminate the other commonly seen structural defects described above.

**INNER DOOR PAN:**

An inner door pan shall fit flush with the inner edges of the door. Inner door pans that do not fit flush will have sharp or ragged edges exposed and will not be acceptable. The panels must be attached to the door structure with machine screws and nutserts to prevent stripping.

Sheet metal screws or rivets will not be accepted.

Every reasonable effort shall be made to construct the doors to prevent rattling.

**DOOR SEAL:**

All module doors shall incorporate an extruded rubber seal located around the perimeter of the door. The seal shall insert into a groove in the inner door extrusion. Seals that are installed around compartment openings will be easily torn by the movement of equipment across them. In addition, glue will not be permitted except in the case of a double door compartment.

The requested design does not include a

groove on the underlying door edge of a double door compartment. That edge alone will require an adhesive. Glue for all seals is not desirable because of increased replacement time and insufficient

**DOOR JAMB:**

All doorjamb must be separate from the body skin and must be welded to body frame members so as to ensure continued door alignment and proper latching. The compartment frame shall be designed in such a manner as to provide extra protection around the compartment openings. The reinforcement tube shall be at least 1 wide. For added strength, the frame shall be at least .188 thick where screws are attached.

Prior to door installation the doors shall be true fit to the doorjamb. The fitting, prior to installation, shall provide added assurance that the door aligns properly with the doorjamb.

**SCUFF PLATES:**

Stainless steel scuff panels shall be installed on the door jamb. The plates shall measure the full height of the door opening.

**PIANO HINGES:**

All doors shall have full-length stainless steel hinges. The hinges shall be .070 thick and shall incorporate a .25 diameter pin.

All hinges shall have un-slotted mounting holes for an exact and permanent installation. Hinges that utilize slotted mounting holes are unacceptable because of the continued adjustments that they require.

There shall be an insulating material installed along the length of the hinge where the hinge meets the door frame to separate the stainless hinge from the aluminum body. This material shall be transparent so as not to be visible at any point while the door is being used.

**GAS SHOCK DOOR STAYS:**

The following door hold-open devices shall be installed:

- Compartment doors: Gas filled, 100-degree extension actuator
- Side access door: Gas filled, 110-degree extension actuator
- Rear doors: Cast Products grabber style devices

**DOOR HANDLES AND LATCHING SYSTEM:**

A door latching system is required that provides safety to all on-board personnel and security to all stored equipment. The patient area must be capable of being quickly secured. The following minimum features are to be designed into the module door latching system:

- All door handles shall be rugged automotive style handles that are near flush with the outer door panel. Each handle shall actuate a Nader rotary safety latch.
- The handle and latching system shall be designed by their manufacturer to accommodate electromagnetic activation. Paddle style or D ring style handles that must be retrofitted for this application are unacceptable.
- The entire exterior handle assembly shall be Tri/Mark Series 2100 cast metal that is chrome plated and buffed to a high luster.
- All doors shall have an exterior key lock.
- All three patient area access doors shall include both interior and exterior latch activators. The rear doors shall have an activator installed on the outside of each door. The interior activators shall be located in a recessed pan on the door. A manual lock/unlock device shall be located within the pan. This pan shall be powder coated cast aluminum for extra durability and for ease of decontamination. No plastic products shall be used for this application.
- Exterior double door compartments shall include two exterior latching devices, one on each door. The latching system shall be a proven system that has been subjected to

**PATIENT AREA DOOR OPENINGS:**

REAR DOORS:

Two (2) doors shall be provided at the rear of the module body.

The overall opening of the access to be a minimum of 58.3" in height x 48.75" in width. Both inside and outside door handles shall be installed on each rear door. Left rear doors that can only be activated from the inside are not acceptable.

**SIDE DOOR:**

One (1) side door shall be provided on the curb side of the module body. The opening shall have minimum overall dimensions of 82.1" in height x 30" in width.

There shall be no padding or other material that obstructs the door opening.

**MODULE TO CHASSIS MOUNTING SYSTEM:**

The fire department requires a mounting system that provides a stable and durable attachment of the module body to the chassis frame.

The manufacturer shall provide a complete description of the module mounting system, including the materials to be used, size and thickness of the material, and methods of attachment to the chassis frame.

**INSULATION:**

Manufacturer shall provide a complete description of the insulating materials and methods of attachment.

The compartment and access doors shall be fully insulated and thoroughly lined for sound deadening capability.

**DRIVERSIDE FRONT COMPARTMENT (#1):**

The compartment described above shall feature the following minimum dimensions:

Clear Door Opening: 16.75" wide x 82.1" high  
Actual Dimension: 21.5" wide x 85.5" high x 20" deep.

This compartment shall be accessed through a single hinged door meeting the standards for door construction, hinging, and latching outlined within this specification. The compartment shall house the vehicle's primary O2 cylinder and shall be vented to the outside in such a way as to prevent moisture from entering the compartment. Under no circumstances shall vents be installed within the compartment door.

The compartment itself shall be constructed

as an individual box and welded into the body structural framing. The material used shall be .100" polished aluminum diamond plate that is continuously welded at all seams. The compartment shall include two strips of LED lights, one to either side of the compartment door, to provide lighting inside the compartment.

**ADDITIONAL FEATURES:**

!! Recess an insert cabinet into the extreme left hand portion of the back wall of this compartment. Cabinet to house (4) "D" size cylinders horizontally. (1) above the other. Cabinet to recess into the left front cabinet. A door shall be installed on face inside compartment, hinged on left hand side with a paddle latch to keep door closed. Bottles are to be accessible from the exterior compartment. Due to bottle length, and depth of vertical cabinet, this storage cabinet will protrude into the street side forward compartment. Make storage as small as possible to maximize remaining room in the vertical cabinet behind attendant's seat.

**PULL OUT TRAY:**

One (1) "Slidemaster" or approved equal pull out tray shall be installed. This tray shall be made to secure the large oxygen cylinder for the on-board oxygen supply.

**SHELVING FOR VERTICAL EXTERIOR COMPARTMENT:**

A shelf shall be installed in the location(s) noted below. All shelving is to be fabricated from 3003-H14 aluminum diamond plate. This material is to be .125" thick. All shelving is to include a 2" integral lip to prevent equipment from sliding off of the shelf. Lastly, all shelving is to include a compartment light on the bottom of the shelf to light the area beneath the shelf. The compartment light shall meet the lighting criteria as described elsewhere within this specification.

Quantity: One

Locate: Above O2 tank

!! Install 1 shelf that is shallow enough to allow customer to mount other equipment to it.

Dealer to supply mounting hardware for two (2) pike poles in this compartment.

**DRIVERS SIDE INTERMEDIATE COMPARTMENT (#3):**

The compartment described above shall feature the following minimum dimensions:

Clear Door Opening: 26.7" wide x 41.3" high  
Actual Dimension: 32.2" wide x 44.6" high x 20" deep

This compartment shall be accessed through a single hinged door meeting the standards for door construction, hinging, and latching outlined within this specification. A portion of this compartment shall house the vehicle's required onboard electrical components as specified for use on this vehicle. The remainder of the compartment shall be utilized for storage of miscellaneous items as required by this purchaser. This compartment shall be vented to the outside in such a way as to prevent moisture from entering the compartment. Under no circumstances shall vents be installed within the compartment door unless they are required for airflow to equipment installed within this compartment. The compartment itself shall be constructed as an individual box and welded into the body structural framing. The material used shall be .100" polished aluminum diamond plate that is continuously welded at all seams. The compartment shall include two strips of LED lights, one to either side of the compartment door, to provide lighting inside the compartment.

**ADDITIONAL FEATURES:**

!! Dealer will supply and install four SCBA bottle brackets with straps in location determined by Metro Fire Agency.

!! Hanging brackets for 2 sets of helmets, coats, and turnouts will be installed in a location to be determined at a preconstruction conference.

**DRIVERS SIDE REAR COMPARTMENT (#4):**

The compartment described above shall feature the following minimum dimensions:

Clear Door Opening: 42.8" wide x 82.1" high  
Actual Dimension: 47.4" wide x 85.5" high x 20" deep

This compartment shall be accessed through double hinged doors meeting the standards for door construction, hinging, and latching outlined within this specification. The compartment shall be used for miscellaneous storage by the purchaser and shall be vented to the outside in such a way as to prevent moisture from entering the compartment. Under no circumstances shall vents be installed within the compartment door. The compartment itself shall be constructed as an individual box and welded into the body structural framing. The material used shall be .100" polished aluminum diamond plate that is continuously welded at all seams. The compartment shall include two strips of LED lights, one to either side of the compartment door, to provide lighting inside the compartment.

**ADDITIONAL FEATURES:**

!! Dealer to supply and install a 2.5 gallon pressurized water fire extinguisher and a 25 lb. dry chemical fire extinguisher with vehicle brackets. The extinguishers will be installed in a location determined

**SHELVING FOR DOUBLE-DOOR EXTERIOR COMPARTMENT:**

A shelf shall be installed in the location(s) noted below. All shelving is to be fabricated from 3003-H14 aluminum diamond plate. This material shall be .125" thick. All shelving is to include a 2" integral lip to prevent equipment from sliding off of the shelf.

Lastly, all shelving is to include a compartment light on the bottom of the shelf to light the area beneath the shelf. The compartment light shall meet the lighting criteria as described elsewhere within this specification.

Quantity: Four

**PASSENGERS SIDE REAR COMPARTMENT (#5) BACKBOARD:**

The compartment described above shall feature the following minimum dimensions:

Clear Door Opening: 21.1" wide x 79.1" high  
Actual Dimension: 22" wide x 82.5" high x 20" deep

This compartment shall be accessed through a single hinged door meeting the standards for door construction, hinging, and latching outlined within this specification. This compartment shall be primarily utilized for storage of purchaser-supplied backboards and other miscellaneous items as required by this purchaser. This compartment shall be vented to the outside in such a way as to prevent moisture from entering the compartment. Under no circumstances shall vents be installed within the compartment door. The compartment itself shall be constructed as an individual box and welded into the body structural framing. The material used shall be .125" aluminum that is continuously welded at all seams. The compartment shall include two strips of LED lights, one to either side of the compartment door, to provide lighting inside the compartment.

**SHELVING FOR VERTICAL EXTERIOR COMPARTMENT:**

A shelf shall be installed in the location(s) noted below. All shelving is to be fabricated from 3003-H14 aluminum diamond plate. This material is to be .125" thick. All shelving is to include a 2" integral lip to prevent equipment from sliding off of the shelf. Lastly, all shelving is to include a compartment light on the bottom of the shelf to light the area beneath the shelf. The compartment light shall meet the lighting criteria as described elsewhere within this specification.

Quantity: Two  
Locate: To be on the right of the divider and spaced equally.

**FIXED VERTICAL COMPARTMENT DIVIDER:**

A 16" vertical divider shall be installed as noted below. The divider shall be non-adjustable and shall be fabricated from the same material used in the construction of the compartment in which it is to be installed.

Quantity: One  
Locate: to be determined at pre-construction conference.

**PASSENGERS SIDE INTERMEDIATE COMPARTMENT (#6):**

The compartment described above shall feature the following minimum dimensions:

Clear Door Opening: 24.6" wide x 16.6" high  
Actual Dimension: 32.1" wide x 19.7" high x 20" deep

This compartment shall be accessed through a single hinged door meeting the standards for door construction, hinging, and latching outlined within this specification. This compartment shall be utilized for storage of miscellaneous items as required by this purchaser. This compartment shall be vented to the outside in such a way as to prevent moisture from entering the compartment. Under no circumstances shall vents be installed within the compartment door. The compartment itself shall be constructed as an individual box and welded into the body structural framing. The material used shall be .100" polished aluminum diamond plate that is continuously welded at all seams. The compartment shall include two strips of LED lights, one to either side of the compartment door, to provide lighting inside the compartment.

**PASSENGERS SIDE FRONT COMPARTMENT (#7):**

The compartment described above shall feature the following minimum dimensions:

Clear Door Opening: 16.5" wide x 82.1" high  
Actual Dimension: 21.6" wide x 85.5" high x 30" deep

This compartment shall be accessed through a single hinged door meeting the standards for door construction, hinging, and latching outlined within this specification. This compartment shall also be accessible from the vehicle interior front wall area. This compartment shall be utilized for storage of purchaser-supplied jump kits and other miscellaneous items as required by this purchaser. The compartment itself shall be constructed as an individual box and welded into the body structural framing. The material used shall be .125" aluminum that is continuously welded at all seams. The

compartment shall include two strips of LED lights, one to either side of the compartment door, to provide lighting inside the compartment.

**ADDITIONAL COMPARTMENT LIGHTS:**

Additional compartment lighting, meeting the standards listed within these specifications, shall be installed in the quantity and location(s) listed below:

Quantity: Three

Locate: One under each shelf in the passenger side front inside/outside compartment.

One (1) 4" diameter light, with an amber lens shall be installed on the inside of each door that opens to face to the rear.

**KKK-A-1822 CERTIFICATION LABEL:**

The vehicle shall have weight/payload, electrical load, and the current KKK-A-1822 certification stickers installed in the O2 compartment.

Failure to provide these certification labels will be cause for rejection of the completed vehicle. Labels that are found to be falsified will also be cause for rejection of the completed vehicle.

**SPECIAL BODY REQUIREMENTS:**

The requirements set forth in the following section of this specification represent items and features that may not be offered as standard by the bidder. If the bidder is unable to furnish any items listed in this section, then that inability must be listed and explained in the bidder's list of exceptions. Failure to do so will result in rejection of the bidder's proposal as being non-responsive

**SKIRT DESIGN:**

The curbside skirt, forward of the rear wheel well shall be dropped six (6) inches. Two integral aluminum diamond plate steps shall be installed within the side access door step well for improved accessibility to the patient compartment. Under no circumstances shall this be accomplished by bolting an additional step to the step well.

The design must be such that all steps are

integral. The use of bolts, rivets, or any other type of fastener is prohibited.

**DRIVERS SIDE OF BODY LOWERED 6":**

The street side body skirt, forward of the rear wheel well, shall be dropped six (6) inches. The extra room is to be provided inside the compartments in this area.

**SOUNDPROOFING:**

To insure good working conditions and to create a stable patient environment, the vehicle shall be manufactured with particular attention paid to sound control.

The entire module shall have applied a soundproofing material either sprayed on or wrapped. All interior surfaces, cabinet interiors, floor and ceilings, and doors shall be likewise coated.

The manufacturer shall provide a complete description of surfaces to be coated and materials to be used for the sound deadening coating and acoustic insulation.

**DRIVERS SIDE WHEEL WELL COMPARTMENT/PULL OUT DRAWER:**

A diamond plate compartment shall be constructed above the street side wheel well. The door of this compartment shall be affixed to a slide-out tray within the compartment. The slide-out tray shall be fabricated from aluminum diamond plate. The door/tray assembly shall include a latching mechanism identical to those described for all exterior compartment doors so as to assure that the compartment will remain securely closed and, when necessary, locked. The door and compartment construction methods and materials utilized shall match those listed within the appropriate section of this specification.

**MODULE BODY HARDWARE:**

The following section lists hardware items that are to be installed on the vehicle body.

**WINDOWS, MODULE BODY ENTRY DOORS:**

The module body access doors shall include windows. The two rear doors shall feature fixed windows while the side access door shall feature a sliding window.

Each of these windows shall measure 16.5"h x 17"w and shall be glazed and tinted in

accordance with FMVSS. The windows shall be encased in extruded aluminum frames. Under no circumstances will RV style windows, windows that rely on rubber gaskets, windows that do not feature extruded aluminum frames, or windows that do not meet the above stated minimum dimensions be acceptable.

**PRIVACY GLASS:**

All of the patient area windows, as specified above, shall feature a dark 'privacy' tint. This tint shall be incorporated into the glass.

This process is required over those utilizing laminates or films due to the tendency of such materials to peel or bubble over time.

**SPLASH SHIELDS:**

Stainless steel splash shields are to be installed on the lower front face of the module body just aft of the cab access doors.

These shields are to have a #8 mirror finish and shall match the height of the diamond plate corners guards that are to wrap around the lower corner posts on the side of the body.

**RUBBER FENDERS:**

Extruded rubber fender flares shall be installed above each wheel well opening. The mounting of these flares shall provide for no contact between the fender fasteners and the aluminum body skin. This is done to eliminate any contact between dissimilar metals and the electrolysis that may result.

**RUB RAILS:**

Polished stainless lower body rub rails shall be installed on each side of the module body. Each rail shall be securely installed yet simple to remove and replace in the event of damage. Each rail is to be a three piece assembly to include a channel style rub rail and two removable end caps. These rails are to have a #8 mirror finish.

Rubber rub rails are not acceptable to this purchaser.

**STAINLESS STEEL COMPARTMENT SILL PLATES:**

Stainless steel sill plates shall be

installed per the location description below.

Quantity: Six

Locate: Every compartment door jamb

**EXTENDED CORNER GUARDS:**

Extended stainless steel stone guards and polished aluminum diamond plate corner guards shall be installed as noted below. The guards shall be extended and shall terminate where noted.

Locate: Front of body

Configure: Extend to bottom of paint stripe

**REAR ACCESS DOOR HOLD-OPEN DEVICES:**

Cast Products "Grabber" style rear door hold-open devices shall be installed to maintain the rear access doors in the 'open' position. One loop shall be installed on each door, and the appropriate socket shall be installed on the body.

**ELECTRIC LOCKS, COMPARTMENT DOORS:**

Power activated door locks shall be installed on all exterior compartment doors. Locks shall be activated by switches located at each patient area access door and in the front radio console. Each lock may be individually overridden by the use of a key.

**ELECTRIC LOCKS, ACCESS DOORS:**

Power activated door locks shall be installed on patient area access doors. Locks shall be activated by switches located at each patient area access door and in the front radio console. Locks may be overridden by a manual slide lever or by the door key.

**CONCEALED DOOR LOCK SWITCH:**

A concealed weatherproof switch shall be installed as indicated below to operate the power door locks specified above. The switch shall be wired to unlock only.

Locate: Grille area

**DOOR LOCKS WIRED THROUGH OEM SWITCHES:**

The power door locks specified above are to be wired to the O.E.M. chassis door lock switches. The converter-added switches in the module shall operate the module body only.

They are not to operate the cab door locks.

**REFLECTORS ON ENTRY DOORS:**

Red reflectors shall be installed on the inside on the patient area doors.

**RUBBER MATTING IN EXTERIOR COMPARTMENTS:**

Black rubber matting material shall be cut to size and installed on the bottoms of all exterior compartments and shelves. The material shall feature integral ridges to help equipment to stay in place.

**RUBBER-COVERED WALLS IN BACKBOARD COMPARTMENT:**

The walls of the backboard compartment shall be covered with self-adhesive textured rubber matting to protect the walls and the equipment stored in this area from any damage.

Color: Gray

**PAINT AND STRIPING:**

The manufacturer shall provide a complete description of the paint application processes.

The painting process shall yield an application that is free of streaks, runs, or dull finish.

All body doors and hardware must be removed prior to any wash, prime or final paint application. All material impurities and oils must be removed from the bare aluminum body.

The entire module body, excluding the underside, will have all visible welds ground down and all material imperfections filled.

All holes (e.g. for hinge mounting, etc.) shall be plugged at this stage to prevent any cleaning agents from entering the module body framework.

**PAINT MANUFACTURER'S INSPECTIONS:**

The manufacturer shall maintain an outside paint audit system. As part of that audit the paint manufacturer shall regularly receive and test sample paint panels that are painted along with module bodies. The paint manufacturer shall also provide regular onsite inspections of the vehicle

manufacturers paint process to assure a consistent level of quality. Audit reports from these inspections shall be provided to the Metro Fire Agency.

**NON-METALLIC HOLE INSERTS:**

All locations where light heads and fenders attach to the aluminum body shall utilize threaded Nylon inserts to isolate the fasteners from the aluminum module body skin and structure.

This practice, along with the other measures described above, shall act to minimize the threat of electrolysis.

**PAINT WARRANTY:**

The paint warranty provided by the converter must meet all warranty standards as set forth elsewhere within this specification. At a minimum this warranty will be 4 years/48,000 miles. The warranty MUST NOT be prorated in any manner. Bidder must submit a manufacturer's paint warranty certificate with the bid. Failure to do so will result in automatic rejection of the bidder's proposal.

**CHASSIS PAINT COLOR:**

The chassis shall be painted by the ambulance converter with Sikkens Autocryl acrylic urethane paint. The paint shall meet the following requirements:

Paint Color: Vermillion red  
Paint Number: FLNA3050

!! The Ford OEM front flare fenderettes will be painted red to match the chassis.

**BODY PAINT COLOR:**

The final paint application to the vehicle body shall be made with Sikkens Autocryl acrylic urethane paint.

Paint Color: Vermillion Red  
Paint Number: Sikkens # 50 FLNA 3050

Module roof and drip rails to be red.

**VEHICLE STRIPING:**

A special stripe shall be applied to match previous vehicles in service. The stripe design shall match the photographs, diagrams, and/or drawings as provided by the purchaser as may be required. The successful bidder shall provide, prior to any stripe application, CAD drawings that depict the required stripe as it will appear on the finished vehicle.

The stripe shall be as follows:

Stripe:                    White Scotchlite

STRIPE TO BE A 4" WHITE SCOTCHLITE. STRIPE TO TRAVEL ALONG THE BOTTOM THIRD OF THE CAB AND CHASSIS AT A LEVEL APPROXIMATELY ALONG THE TOP OF THE WHEEL WELL.

NOTE "DIAL 911" GOLD REFLECTIVE "NON GOLD LEAF" DECALS ON SIDES OF BODY AT REAR.

Each Fire Department shall provide photo's of their current stripping design.

**CABINET DOORS, PLEXIGLAS, HANDLES AND HARDWARE:**

Information relative to interior door materials, handles, and hardware is provided below:

**HANDLES FOR PLEXIGLAS DOORS:**

All sliding Plexiglas doors within the patient compartment of the vehicle are to have extruded handles installed the full height of each door at the outermost edge.

**LATCHES FOR HINGED DOORS:**

The hinged doors within the patient compartment are to utilize Southco Stainless Steel flush-style latches as noted below. These latches shall feature recessed pull ring style handles. The latches shall be both positive (mechanical latching) and passive (latches automatically).

Locking:  
Non-Locking:

Note: Locking latch locations are to be noted on the drawings.



formulated to provide maximum resistance to foot traffic. The bidder should note that most commercial grade flooring materials do not meet this requirement. However, this floor treatment is mandatory due to the fact that it has proven to greatly reduce the staining caused by routine wear in an ambulance and because it allows for much easier cleaning of the floor.

**INTERIOR STORAGE AREAS:**

All interior storage cabinets, including the interior of the squad bench, shall be painted for ease of cleaning. Under no circumstances shall carpet be used within these storage cabinets as it is impossible to decontaminate. The paint color is listed within the "Interior Color" section of this specification.

**RISERS:**

The interior of this vehicle shall be constructed without the use of wood or wood-based products. The risers shall be constructed of a reinforced structural composite consisting of a high density polypropylene core laminated between two layers of .024" aluminum skin. The composite shall then be covered by a Formica overlamine to match the interior of the vehicle. The finished riser panels shall be impervious to water or other forms of moisture and must be guaranteed against rotting or decomposition.

**CAPTAINS SEAT:**

An attendant's seat base shall be fabricated from aluminum and shall be installed in a position at the head of the cot. The base shall house the vehicle's heat/AC unit as described in that section of this specification. The material shall be perforated to promote airflow to the unit. An EVS model 1800 bucket type seat with a built-in child safety seat shall be installed on the seat base in the rear-facing position. The seat shall be upholstered to match the vehicle interior, and shall be capable of adjustment from front to rear.

Under NO circumstances shall this seat be installed in any manner that allows it to swivel due to the lack of stability and

weaker structural characteristics inherent in such designs. A seatbelt shall be installed at this location for the occupant of this seat.

All interior seating shall meet the current standard for interior seating and restraints for seated passengers.

**ALUMINUM INTERIOR CABINETS, STREET SIDE:**

This specification requires an all aluminum modular cabinet design.

Aluminum, a minimum of .063" thickness, is required over wooden cabinetry due to its lighter weight, greater durability, and the ease with which it can be decontaminated. The main cabinet wall shall be of modular construction. All individual cabinets shall be of welded construction. To insure the safety of patients and attendants in the rear of the vehicle, the main cabinet wall installation shall have been tested to a minimum frontal impact of 30 G's per the requirements of the Safety Certification section of this specification. The main cabinet wall may not be constructed of any wood or wood product. Wooden cabinetry can warp, expand, contract, splinter, separate, or crack. Wood will also harbor blood borne pathogens whereas aluminum can be easily cleaned. Aluminum will remain stable and securely mounted (no fibers to compress) over many years and miles of continuous service. For these reasons, wooden cabinets, even when laminated with another material, will not be acceptable.

Bids received that utilize any material other than that which is specified above will be considered non-responsive and will be rejected without further consideration.

**INTERIOR CABINETRY, STREET SIDE**

All of the aluminum cabinetry within the vehicle shall be of welded construction. Methods of cabinet construction that utilize rivets or adhesives of any type will not be considered.

**ALUMINUM CABINET WARRANTY:**

The all aluminum cabinet construction, as described within this section, shall be

warranted against any structural defects for a period of time not less than 15 years. This warranty shall be stated within the manufacturer's structural warranty document, and shall not be subject to any mileage limitations.

**CABINET BEHIND ATTENDANT SEAT:**

A vertical storage cabinet shall be located behind the attendant seat. The upper storage area shall house the primary electrical distribution area. The lower section shall be used for miscellaneous storage. The left and right cabinet walls shall be fitted with Unistrut shelf track for an aluminum adjustable shelf. Each area shall be accessed through hinged doors. The electrical distribution area shall include a Southco key lock/latching device. The entire cabinet shall be fabricated from aluminum. The interior of the cabinet shall be painted and trimmed as described in the cabinet construction section of the specification.

- Number of Doors: 2  
(Including Electrical Cabinet)
- Number of Shelves (Adjustable): 1
- Number of Shelves (Fixed): 1

**STREET SIDE CABINET WALL:**

The street side main cabinet wall shall be constructed from aluminum as described above. Each cabinet within the cabinet wall shall be designed and constructed as an individual welded aluminum box. Each box shall be insulated and soundproofed. The boxes shall then be bolted together to form the main cabinet wall. This design will allow for future modifications to the cabinetry should equipment storage requirements be updated. The cabinet wall assembly shall be further insulated against noise and temperature extremes.

The entire assembly shall be bolted to the module body structure. Cabinets that are welded or otherwise permanently affixed to the module body structure will be unacceptable. Such permanent installation methods limit the ability to make design updates at a later time. They also increase the time and cost involved with regard to remounting the body onto a new chassis should that occasion ever

arise. Likewise, cabinets mounted with the use of either rivets or adhesives of any kind will not be considered without exception.

**CABINET SHELVING:**

All interior cabinet shelves shall be fabricated from aluminum. The shelves shall utilize mini Unistrut adjustable shelf track.

Quantity: To be determined at pre-construction meeting

Locate: Pre-construction meeting

**TESTING AND STRUCTURAL INTEGRITY:**

The cabinet wall design and construction methods described within this specification shall have been subjected to Hygee sled testing as described within the "Safety Certification" section of this document. This testing shall have been performed to a minimum of 30 g's. This testing is in addition to all other testing, whether mandated or voluntary, that has been performed. The cabinet wall shall not be, in any way, responsible for any portion of the module body's structural integrity. However, the cabinet wall, as well as the methods and materials used to attach the wall to the vehicle, must be structurally sound in the unlikely event that this vehicle is involved in an accident.

This testing is required as an added assurance that the vehicle interior is crash-stable and safe for all vehicle occupants. Proposals that include cabinet wall designs that have not been subjected to this testing will be rejected on the basis of being non-responsive.

**ADJUSTABLE VERTICAL DIVIDERS:**

Adjustable shelf tracks shall be recessed into the upper and lower walls of the cabinet(s) listed below.

Plexiglas dividers shall be fabricated and shall fit vertically into the recessed tracks. The dividers shall be adjustable within the track and held into position with cushioned track shelf supports. Note the quantity and location information provided below:

Locate:

Two areas: Cabinet above action area and

cabinet above squad bench.

**LOCK BOX :**

A single lockable door shall be installed on the cabinet noted below and designated in the vehicle drawings.

The door shall include a Southco locking/latching device, and shall be constructed of Formica-covered material.

Locate Cabinet behind captain's chair.

**SHARPES/WASTE DISPOSAL:**

A sharps/waste disposal area shall be installed in a recessed area, fabricated from aluminum, in the inhalation counter top. The lid for this area shall include a spring-loaded hinged-down door through which access will be made to the waste container. The neck of the sharps container will protrude through the top surface of the lid for sharps disposal access. The hinged aluminum lid will provide access to both containers for removal and replacement.

**SHARPES/WASTE DISPOSAL:**

An aluminum cabinet shall be installed on a tip-out door in the main cabinet wall per the instructions listed below. This cabinet will house a sharps/waste disposal location. Both the sharps and the waste containers shall be easily removable from this area. The tip-out door will include a Southco latching device to hold it in the 'closed' position.

**INSIDE/OUTSIDE ACCESS:**

An inside/outside dual access storage area shall be provided as indicated below. This area shall be accessible through both an exterior compartment door, and an interior cabinet door.

Locate: Rear of main cabinet wall

Door Style: hinged Plexiglas

**SQUAD BENCH:**

A minimum 22" wide x 72" long split squad bench cushion shall be provided on the curb side of the patient area. The cushion shall incorporate posts and wheel cups for the stretcher listed below. Three seat belts

shall also be installed in this area for the seated position, and for backboard retention for a secondary patient. These belts shall meet all applicable testing requirements as set forth in the latest federal 'K' specs. In addition, these belts shall have been subjected to a Hygee sled test of at least 30g's.  
Squad bench restraints that have not been subjected to this testing will not be acceptable.

Stretcher Model Number: FW #11

**BENCH RESTRAINT:**

A vertical grab rail shall be installed at the forward end of the squad bench. The rail shall connect to the squad bench riser and shall extend to the patient area ceiling. Each end of the rail must be bolted through aluminum material for strength. Methods of installation that bolt through wood, or through a non-aluminum headliner material only will not be acceptable.

A horizontal partition divider shall be installed between the vertical rail and the module body curb side wall.

Elastic storage pouches shall be provided on either side of this partition. The partition is to be covered with upholstery as described in the upholstery section of this specification.

**GAS OPERATED LID STAY:**

241b. Gas piston style hold-open devices shall be installed on the flip-up squad bench cushions. These devices will provide for smooth and simple operation. For that reason substitute hold-open devices, such as ratchet style devices, will not be acceptable.

**BENCH HOLD DOWN:**

Paddle style latches shall be installed on each flip-up bench cushion to hold the cushions in the 'closed' position.

The operation of these latches shall be passive and shall require intentional unlatching in order to raise the squad bench cushion. Each latch is to be flush mounted in the face of the squad bench riser.

**SQUAD BENCH EDGE PROTECTION:**

An aluminum angled trim piece shall be installed along the bottom edge of each bench cushion. Each piece shall be bent to follow the contour of each cushion on the horizontal plane. These trim pieces shall provide added protection for the upholstery against extensive wear.

**SHARPES/WASTE DISPOSAL:**

An aluminum drawer shall be installed in the face of the squad bench per the instructions listed below.

This drawer will house a sharps/waste disposal location.

Locate: Sharps/waste will be through squad bench lid with access holes for each. The waste will have a hinged flap and the sharps neck shall protrude through the hole.

**BENCH CEILING CABINET:**

A cabinet shall be installed at ceiling level over the full length of the squad bench. This cabinet is to be fabricated from .063" 5052-H32 welded aluminum. The interior of the cabinet shall be painted per the cabinet construction description listed elsewhere within this specification.

The cabinet is to be accessed through hinged Plexiglas doors that are held in the 'open' position by gas piston hold-open devices.

The forward portion of this cabinet shall be a separate cabinet dedicated to glove storage and distribution. This cabinet shall store three (3) boxes of gloves.

Oval openings shall be provided in the door for access to gloves. Glove box replacement shall be attained by opening the flip-up door for full access to the cabinet.

**INSIDE/OUTSIDE ACCESS:**

An inside/outside dual access storage area shall be provided as indicated below. This area shall be accessible through both an exterior compartment door, and an interior

cabinet door.

Locate: Curb side rear  
Door Style: Hinged Plexiglas

**SPECIAL INSTRUCTION, CURBSIDE CABINETRY**

Install a dry erase board on the curbside wall. Exact location to be determined at the pre-construction conference.

**ALUMINUM INTERIOR CABINETS, FORWARD WALL:**

Like all other cabinets in the patient area that are to be fabricated and installed by the manufacturer, the cabinets on the forward wall are to be fabricated from aluminum as dictated in the appropriate section above. Again, failure of the bidder to meet the criteria established within this specification with regard to cabinet design, construction, materials, and testing will be cause for rejection of the bid as being

**FRONT WALL CABINET:**

A cabinet shall be provided on the front wall of the patient area just inside the side access door. This cabinet shall run from floor to ceiling and shall be fabricated from .063" welded aluminum. The cabinet shall be anchored at both the top and bottom for stability.

This stability must have been tested through a Hygee sled test of at least 30g's. Under no circumstances shall this cabinet be welded to any module body structural member. This storage area shall be used to house purchaser supplied bagged equipment and supplies.

Finish Material: texture painted surface  
Color: per interior color scheme section  
Shelf Quantity: 1 (.125" thick material)

Shelf Liner: rubber matting

**IMPORTANT: INVERT THE BOTTOM OF THE CABINET SO THERE IS NO FLANGE. ALSO, BREAK THE FLANGES ON THE FRONT & RIGHT SIDES OF ALL SHELVES IN THIS CABINET DOWN TO ELIMINATE FLANGE PROTRUDING UP THAT MIGHT CATCH ON ITEMS BEING PULLED OUT OF THE CABINET.**

**SPECIAL INSTRUCTION, FRONT WALL CABINET**

The front wall cabinet shelving shall have the lips on the curb side bent down instead of the standard up position on the side that is accessible through the outside compartment door. This is to ensure the equipment is not damaged on the lips when removing it.

**MODULE INTERIOR ACCESSORIES AND TRIM:**

The following section addresses interior accessories and trim features.

All installation locations, as noted below, shall be strictly adhered to by the bidder. The items in this section will directly influence the quality of care given to the patient, as well as the safety of the attendants.

For these reasons the installation locations listed below must be met without exception.

**IV HOOKS:**

Cast Products recessed swing-down IV hangers shall be installed per the instructions listed below. These hangers are to be near flush mounted into the patient area ceiling to reduce their interference with the walkway when not in use. The arms of each hanger shall be rubberized so as to reduce the possibility of injury that may occur if contact is made with them. This style IV hanger shall be sufficient to meet Federal KKK-1822-E.

- Quantity: 2
- Locate: Mid body over squad bench
- Locate: Mid body over cot

**ANTI-MICROBIAL COATED COT CEILING GRAB RAIL:**

A grab rail shall be installed in the ceiling as noted below. This rail is to be constructed of stainless steel. Integral stanchions shall be welded into place at fixed points along the length of the rail for attachment to the ceiling. The rail shall attach through aluminum mounting plates that are welded to the module roof structure for strength and durability. Because contamination occurs most often as a result

of contact, this feature must be treated with an anti-microbial agent consisting of an inorganic ceramic coating embedded with silver ions. This coating shall be effective against a broad range of microbes including bacteria, molds, algae and fungi.

Split Rails For Cot: Two 2' sections  
Locate: Each side of CPR seat over cot

**ANTI-MICROBIAL COATED BENCH CEILING GRAB RAIL:**

A grab rail shall be installed in the ceiling as noted below. This rail is to be constructed of stainless steel. Integral stanchions shall be welded into place at fixed points along the length of the rail for attachment to the ceiling. The rail shall attach through aluminum mounting plates that are welded to the module roof structure for strength and durability. Because contamination occurs most often as a result of contact, this feature must be treated with an anti-microbial agent consisting of an inorganic ceramic coating embedded with silver ions. This coating shall be effective against a broad range of microbes including bacteria, molds, algae and fungi.

Size: 6'  
Locate: Centered on cot

**PATIENT AREA DOOR GRAB RAILS:**

Angled door handles shall be installed on the interior door panels of each access door. The handles shall be one-piece and shall be constructed of stainless steel. The handles shall feature smooth radius corners and flange mounts at each attachment point. Because contamination occurs most often as a result of contact, this feature must be treated with an anti-microbial agent consisting of an inorganic ceramic coating embedded with silver ions. This coating shall be effective against a broad range of microbes including bacteria, molds,

**COVE MOLDING:**

A radius cove molding shall be installed at all areas of the floor that may have seams.

**PROTECTIVE EDGE TRIM:**

The 90 degree edges of the squad bench, the

attendant seat riser, and the front wall cabinet shall be protected by a chamfered trim angle.

**CEILING:**

The patient area ceiling shall be constructed of a bright white Alcopla aluminum composite material consisting of a polyethylene core laminated between two sheets of coated aluminum. The headliner shall be smooth, impervious to moisture, easy to clean and durable. It shall have the same rate of expansion and contraction as the aluminum body.

Headliner that is padded or upholstered in any way will not be considered, not will any headliner made of wood or wood products due to the lower degree of durability and the risk of contamination inherent in such

materials. Plastic, fiberglass or ABS headliner material is not acceptable due to the cracking commonly causing by the differing rates

**COT MOUNTS AND PATIENT HANDLING:**

The cot mount/patient handling requirements are specified below. The cot mount installation process shall have been subjected to a Hygee sled test as outlined elsewhere within this specification. Failure to provide documentation of this test having been performed may be cause for rejection of the bidder's proposal.

**COT MOUNT:**

One (1) Stryker cot mount shall be installed per the instructions and recommendations of the hardware manufacturer. The cot mount shall be installed as noted below. The cot mount installation must meet all requirements for cot retention as set forth in the current federal specification.

Cot Model: Stryker MXPro  
Cot Mount Position: DUAL position

**COT:**

One (1) new cot shall be provided complete with mattress and straps as noted below.

The cot shall be installed in the vehicle and shall be properly adjusted for use.

Cot Model: Stryker MX-Pro  
Mattress Color: Black  
Cushion Style: Bolster

**OPTIONS TO BE INCLUDED**

Ergonomic Package, 3-stage IV Pole, wheel lock, head section storage with pouches, removable O2 bottle holder

**LIGHTBARS:**

Lightbar information, as may be required, is noted below:

**FRONT LIGHTBAR FOR 96" BODY:**

The light bar, as described below, shall be provided per the information listed below. Installation of this light bar on the vehicle shall follow the instructions given under the "Light Bar Mounting" section of this specification.

Quantity: One  
Manufacturer: Whelen  
Model: 45KFL Super-LED Flush Mount  
Light Bar Lens Layout:  
R/C/R/C/R/Opticom/R/C/R/C/R  
Configure:  
Corner/400/400/400/400/Opticom/400/400/400/400/Corner

Corner = Corner Linear-LED double stacked  
400 = 400 Series Linear-LED double stacked

Additional Option: Amber LED ICC lights

NOTE: 3M Opticom Emitter model 792 will be furnished and installed by the ambulance manufacturer.

**REAR LIGHTBAR FOR 96" BODY:**

The lightbar specified below shall be installed per the lightbar mounting instructions that follow. This lightbar shall be a maximum of 88" wide for installation with a 96" wide body.

**LED ARROWSTICK :  
REAR TRAFFIC ADVISOR SIGNAL**

The light bar, as described below, shall be provided per the information listed below.

Quantity: One  
Manufacturer: Whelen  
Model: TAM83RR Traffic Advisor,  
30.36" long  
Lens Layout: R/A/A/A/A/A/A/R  
Configure: End red LED's will flash with  
module red flashers.

The amber lights will be wired to a traffic advisor control head mounted in the console.  
Mounting: Above the rear entry doors  
Arrowstick to be in flash mode with master switch on. A switch on the front panel will allow customer to disable this mode, red LED's to be wired with Red Flashers.

**HEADLIGHT FLASHER:**

The vehicle headlights shall alternately flash through the activation of the appropriate switch on the cab control console. This feature shall be accomplished through a solid state flashing device that is a part of the primary electrical control board.

A programmable phase control shall be built into the system board to allow alteration of the light flashing sequence. The flash pattern must be capable of being switched from an alternating pattern to a pulsating pattern.

The phase of "on" time can be programmed to flash when desired for an effective light pattern. For instance: If the left grill light is flashing "on", the right flashing headlight is desired to be "on". Different flash patterns may be achieved through programming.

**L.E.D. LIGHTING:**

Whelen 900 Series red super L.E.D. lighting shall be installed per the quantity and location requirements listed below. All lighting is to include the optional chrome flange.

Quantity: Eight  
Locate: Two each side, two front under light bar, and two on rear at window level.

**WHITE SUPER L.E.D. FRONT KKK LIGHT, 900 SERIES:**

A Whelen 900 Series white super L.E.D. light assembly shall be installed as noted below to function as a KKK light. The light is to include the optional chrome flange.

Quantity: 1  
Lens Color: White  
Locate: Center of body front face

**AMBER SUPER L.E.D. KKK REAR LIGHT, 900 SERIES:**

A Whelen 900 Series amber super L.E.D. light assembly shall be installed as noted below to function as a KKK light. The light is to include the optional chrome flange.

Quantity: 2  
Lens Color: Amber  
Locate: On rear at each corner

**AMBER SUPER L.E.D. KKK REAR LIGHT, 600 SERIES:**

A Whelen 600 Series amber super L.E.D. light assembly shall be installed as noted below to function as a KKK light.  
The light is to include the optional chrome flange.

Quantity: 1  
Lens Color: Amber  
Locate: Centered above rear doors

**INTERSECTION LIGHTS, SUPER L.E.D. 700 SERIES:**

One pair of Whelen 700 Series super L.E.D. light assemblies shall be installed. One light shall be installed on each chassis front fender.  
The lens color is noted below. Each light is to include the optional chrome flange.

Lens Color: Red

**700 SERIES INTERSECTION LIGHT HOUSINGS:**

Polished housings shall be installed to direct the Intersection lights at approximately a 90 degree angle from the chassis fenders. These housings may be used with halogen, strobe or L.E.D. 7" x 3" light

**GRILLE LIGHTS:**

One pair of Whelen 700 series red super L.E.D. light assemblies shall be provided and installed on the left and right sides of the chassis grille.

The installation shall be done in such a way as to not impede airflow through the chassis manufacturer's O.E.M. grille. Aftermarket, modified, or improvised grille work will not be acceptable.

**ADDITIONAL GRILLE LIGHTS**

To complement the primary set of grille lights, a second set of LED grille lights will be provided and installed on the front grille guard. The LED lights will be provided according to the information listed below.

Quantity: One pair  
Manufacturer: Whelen  
Model: TIR3  
Lens Layout: Red/Red  
Configure: To be activated with the primary grille lights

**AUDIBLE EMERGENCY WARNING SYSTEMS:**

The following audible emergency warning features shall be installed on the vehicle:

**AIR HORNS:**

One pair of Buell air horns shall be installed per the information provided below. The air horn system is to include a heavy duty Buell #16122 air compressor and air storage tank.

Trumpet Location: Through front bumper  
Switch Location: On console

!! Horns will include one 10" and one 12" trumpet for a dual tone.

**SIREN:**

The vehicle manufacturer shall supply and install a Federal EQ2B 200 watt siren as noted below. The siren shall be fully electronic and shall feature digital output control.

Siren Location: Cab Radio Console  
Quantity: 1

**SIREN INSTALLATION:**

The electronic siren specified above shall be installed in the designated location and wired for operation through the speakers noted

**SIREN SPEAKERS:**

Federal Dynamax MS100 speakers shall be installed on the chassis per the instructions listed below.

The speakers shall be wired for operation through the siren listed above.

Quantity: 2  
Locate: Mounted to Push Bumper

**SIREN SPEAKER INSTALLATION:**

The siren speakers specified above shall be bumper mounted and wired for operation.

**ELECTRICAL, NON EMERGENCY LIGHTING:**

The lighting, as noted below, shall be furnished and installed by the successful bidder:

**SIDE BODY RUNNING LIGHTS:**

One Whelen 700 Series L.E.D. light with a red lens and a chrome flange shall be installed on each side of the vehicle towards the rear of the body. These lights shall function as both running lights and turn

**ICC MARKER LIGHTS:**

The required ICC marker lights for this vehicle are to be LED.

**L.E.D. LIGHTED RUB RAILS:**

12" long strips of L.E.D. lights shall be flush mounted into the lower aluminum rub rails on each side of the module body. Each light shall have a scalloped integral lens for maximum light disbursement. Each strip shall contain twelve (12) one inch long lights. The rub rails forward of the wheel wells shall contain three (3) L.E.D. strips, and the area to the rear of the wheel wells shall contain two (2) L.E.D. strips.

The vehicle electrical system shall be programmed to operate these lights at a steady burn when the chassis running lights are activated, and to alternately flash the lights when the "Red Flashing Light" circuit is activated. The lenses shall be designed so that they provide a bright and intense light from a distance.

As the distance is decreased the light shall become less intense so as to assure that the ability of the onboard personnel to see is not compromised. Finally, L.E.D. lights are specified due to their "cold" operating temperature, low amp requirements, and long life expectancy. These lights are designed to enhance vehicle visibility and safety for all onboard personnel.

The colors shall be as follows:

FFront: [R] [W] [R]  
Rear: [R] [W]  
Legend: R=red, A=amber, W=white...

**DOOR SAFETY LIGHTS:**

All doors that when open face to the rear of the vehicle shall have a single 4" AMBER Whelen LED flashing light mounted on the door interior panel.

**SCENE LIGHTS :**

Whelen 13 degree 900 Series Scene Lights shall be installed in the quantity and locations noted below. Each light shall include the optional chrome flange. These lights shall be activated by right and left side switches located within the front electrical control console. Additional means of activation, if any, are listed in the electrical section of these specifications.

<p>Quantity: Four  Locate: Two per side</p> <p>HID lights should be listed in the proposal as an option.</p> <p><b>LOAD LIGHTS, LED if available:</b></p> <p>Whelen 26 degree 600 Series Scene Lights shall be installed in the quantity and locations noted below. Each light shall include the optional chrome flange.</p> <p>These lights shall be activated when the rear doors are opened, and by a switch located within the front electrical control console. Additional means of activation, if any, are listed in the electrical section of these specifications.</p> <p>Quantity: Two  Locate: Above rear doors</p> <p><b>TAIL LIGHTS:</b></p> <p>Whelen 600 Series L.E.D. tail/brake, back-up, and turn signal lights shall be installed on the rear of the module body per the instructions listed below. All six of these lighting assemblies shall include the optional chrome flange. The tail/brake and turn signals shall be L.E.D.style lights. The back-up light shall be halogen.</p> <p>Locate: Stacked above the kick plate</p> <p><b>ELECTRICAL POWER GROUP:</b></p> <p>The manufacturer shall provide a complete description of the electrical system that will be provided for the units described in this specification.</p> <p><b>CONVERTER ADDED ELECTRICAL SYSTEM STANDARDS:</b></p> <p>The converter added electrical system must meet all current KKK ambulance design standards. A system is desired that is simple in design so that electrical problem diagnosis and repair time can be minimized. The electrical system must be thoroughly engineered and manufactured to allow simple personnel operation. Finally, the system must be designed so that the probability of</p>			
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experiencing dead batteries, shorted electrical components and engaging in lengthy troubleshooting procedures will be reduced.

**CONVERTER ADDED CHASSIS CHARGING ENHANCEMENT:**

The basic design for the chassis electrical output system must include equipment that provides adequate electrical needs to operate the vehicle's electrical components.

In addition, a system is desired that continually monitors the chassis voltage and amperage outputs. The end result of the desired electrical output system is longer battery life, less down time associated with charging system repairs, and the fulfillment of each and every emergency response.

**BATTERY SELECTOR SWITCH:**

A two-position power selector, turning the battery power to the ambulance systems either On or Off shall be furnished. The switch shall be located on or near the drivers seat base. Unless otherwise specified, the battery switch shall not disconnect power to the OEM chassis systems.

**VARIABLE THROTTLE ADVANCE:**

In order to reduce the number of component parts and unnecessary throttle linkages, the factory electronic throttle control shall be utilized to activate the throttle advance system. The controls shall require that the chassis be placed in Park or Neutral with the Module Disconnect switch in the On position and the Park Brake engaged before activation of the throttle advance.

A digital display warning on the driver console, accompanied by an audible tone, must instruct the driver to Set Park Brake or Release Park Brake to engage or disengage the automatic throttle control.

**AUTOMATIC LOAD MANAGEMENT:**

In order to insure that onboard personnel attention is focused on victim care rather than being occupied with monitoring vehicle systems, an automatic load management system is required. The bidder must provide a system that continually monitors the vehicles charging system while it is sitting on scene. The system design shall have the ability to automatically shut down not less than ten pre-programmed electrical circuits to prevent

<p>a deficit charging condition while the vehicle is sitting at idle. The system shall be programmed to automatically scan the electrical system on one-minute intervals.</p> <p>If a deficit charging condition continues for more than one minute, a pre-programmed circuit shall shut down, correspondingly reducing the electrical draw. If the deficit condition continues, a second circuit shall automatically shut down. This process shall continue to repeat at one-minute intervals until at least ten circuits are shut down with corresponding load reductions. In the event any circuits are being controlled (disabled) by the load management system, the driver must be informed in two ways. First, a digital display warning shall appear on the driver information panel indicating Load Management Active.</p> <p>At the same time, the L.E.D. switch indicator light shall begin to flash for each specific circuit that is being disabled. Systems that cannot indicate specific circuits being affected by the Load Management System are not acceptable.</p> <p>Load management systems must be programmed through a microprocessor based logic and memory system rather than a series of mechanical relays. Systems that require manual activation of Load Management will not be acceptable. Once the deficit condition ceases to exist, the system must be capable of restarting any disabled circuit without any action required by the driver.</p> <p>The bidder is required to furnish a system that permits the end user, if he so desires, to determine prior to production the order of priority for shedding loads. Although the entire system must function automatically, it must also be designed so that it can be set by the end user to a System Off mode for restocking, training, or maintenance convenience. The System Off setting shall not be merely a switch which would permit the operator to easily turn off Load Management.</p> <p><b>LOW AMPERAGE SWITCHING:</b></p> <p>Electrical devices that are not activated automatically shall be controlled from either the cab or patient area control panels through the use of manual switches. A low amperage switch that sends only an on/off signal to the central electrical distribution area is required.</p>			
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The switches provided shall have documented durability ratings at a minimum of one million (1,000,000) cycles. The switch design shall include stainless steel dome technology to attain the required durability ratings. Membrane or rocker style switches will not be acceptable due to their tendency to degrade and fail in continued field use. To eliminate loose or poor contacts, it is unacceptable to have soldered or terminal type connections for the switches. The switches must be an inherent part of the panels.

**SWITCH "ON" INDICATOR LIGHT:**

All switches (unless otherwise noted) on the panels described below shall include a red L.E.D. indicator light that will indicate when power is being applied to a circuit. Designs that have indicator lights that activate to indicate switch position only are not acceptable. In addition, the indicator lights shall be independently programmable to flash or steady burn as required to meet the end user requirement.

**SWITCH PANEL DESIGN:**

Each console shall contain a combination of control switches as described above and also an integral digital vacuum florescent message center. The message center shall provide driver/attendant information as described below. The message center is required over the use of buttons, lights or gauges because of the ease in acknowledging the specific information. The drivers display shall be capable of displaying at least four sets of 20 character messages at one time. The rear display shall be capable of displaying two sets of 20 character messages at the same time. Both the cab and patient area switch panels shall be fabricated on a pre-printed circuit board. The circuit boards must be common in design and must be interchangeable between all models offered by the manufacturer being proposed. Switch panels that are not standard in design and are not interchangeable from one unit to another will not be considered.

The switch panels shall be fabricated so that they can be removed for service in less than three minutes. The removal of each panel shall be facilitated by the use of a single four-wire connector for panel control and

communication.

An optional rear AM/FM speaker system will have its own six-wire connector in addition to the standard panel connection. Volume control must not have any protruding knobs.

**SWITCH PANEL DECONTAMINATION AND SPILL RESISTANCE:**

Both the driver and the patient area switch panels must be designed so they can be easily decontaminated. Current designs make decontamination impossible when an attendant must use a contaminated glove to operate the switch panel while treating a patient.

These areas become breeding grounds for bacteria. For this reason, the switch panels must be built in such a manner that there are no openings or crevices on the panel faces. The entire switch panel must be sealed with a protective overlay material. There shall be no printing or labeling on the face of this material.

Holes in the panel through which switches, backlighting, or legends are inserted will be unacceptable.

The panels must be cleanable with any commercially available spray type cleaner or disinfectant commonly used by fire and EMS services with no damage created by fluids leaking through openings onto the circuit boards or switch contacts.

The panel surface must be covered with a polyester film laminate for enhanced solvent resistance, strength, and durability. Both front and rear switch panels shall have been tested to at least a 24 hour exposure under DIN 42 115 Part 2 for the following commonly used chemicals: hydrogen peroxide <25%, bleach <20%, glycol, isopropanol, xylene, benzene, phosphoric acid <30%, ammonia <2%, hydrochloric acid <10%, acetic acid <50%, sulphuric acid <10%, diesel fuel, silicone oil, linseed oil, Windex, Formula 409, Fantastic, Wisk, Downey, washing powders, fabric conditioner, Ajax, and glycerin. The bidder shall be required, if asked, to provide the appropriate documentation showing that the above chemicals produced no visible damage after at least a 24 hour exposure. Bidders should be cautioned that commonly used polycarbonate or vinyl membrane fascia and nameplate substrates for electrical panels will not meet this requirement.

**SWITCH PANEL BACKLIGHTING:**

Both switch panels shall have backlight with fiber optic technology, powered with four high intensity L.E.D. lights per panel. All switch perimeters shall be lighted and raised for ease of switch location at night.

In addition, the drivers control panel shall include a red color-coded area to further distinguish warning and emergency controls as well as specific blue color-coded areas for vehicle operation and maintenance systems. The remainder of the switch perimeters shall be green for easy nighttime visibility.

The switch panels shall include, on each panel, an individual intensity control. Switch panel lighting that operates at the same level as the cab instrument panel or that illuminates both the front and rear panels at the same intensity will not be considered. The bidder must provide totally independent control for each panel.

**CAB CONTROL SWITCHING AND DIGITAL DISPLAY:**

Switch Activation:

The cab control center shall include 34 switches installed in a backlight aluminum control panel. The following minimum circuits shall be provided on the switch panel:

- Module Disconnect
- Master Warning Circuit
- Light Bars
- Red Flashing Lights
- Primary/Secondary Override (Each position shall have a red On indicator light
- Right Scene Light
- Left Scene Light
- Rear Loading Lights
- Rear Heat/AC with temperature adjustment
- Single Button Vehicle Electrical Diagnostics
- Horn/Siren
- Vehicle Trip Odometer

Digital Message Center:

The following digital displays will appear on the faceplate of the cab console when selected:

- Voltage (to the nearest 0.10 volt)
- Amperage (to the nearest amp)
- Engine Tachometer
- Inside Patient Area Temperature
- Access or Compartment Door Open Warning Message
- Oxygen Warning For Both Tank and Line Pressure
- Electrical System Diagnostics
- 24 Hour Clock
- Trip Odometer
- Emergency Brake Warning
- The System Shall be Capable of Displaying Specific Verbiage As Directed.

**PATIENT AREA CONTROL SWITCHES AND DIGITAL DISPLAY:**

Switch Activation:

The patient area control center shall include 28 switches installed in a backlight aluminum control panel. The following circuits shall be provided on the switch panel:

- Rear Heat/AC Activation and Separate Temperature Control
- Rear Heat/AC Fan Speed Control
- Power Vent
- Cot Dome Lights and Bench Dome Lights
- Oxygen and Suction
- Patient Status
- Stop Clock
- Oxygen Line Pressure
- Oxygen Cylinder Pressure
- Radio Volume Control (when required)
- Electronic Privacy Glass Activation (when required)

Digital Message Center:

The following digital displays shall appear on the faceplate of the patient area control console when selected:

- Patient Area Temperature
- Thermostat Setting
- Oxygen Tank Pressure
- Oxygen Line pressure
- Oxygen Warning

-Stop Clock  
-The System Shall Be Capable Of Displaying Specific Verbiage As Directed

**SPARE SWITCHES:**

Any spare or unused switches must be capable of being programmed later for additional functions including the ability to act as macro switches (one switch activating multiple features) without the need for

**MODULE COMPARTMENT AND ACCESS DOOR SWITCHES:**

Exterior circuits such as loading lights, side scene lights and compartment lights shall be activated by low amperage, non-mechanical switches. The type of switch desired is a magnetic sensitive switch that activates the circuit when the magnetic plane is broken. Plunger type switches are not acceptable because of their short useful life and higher amperage requirements.

**DOOR OPEN INDICATOR:**

A Door Open warning indicator, with accompanying audible chime shall be installed in both the cab and patient area. A digital display shall appear on both consoles indicating which specific door has been left ajar. In the case of access doors, the display will read Front Access Door Ajar or Rear Access Door Ajar.

In the case of a module compartment door, the display will read Compartment #1 Ajar etc.

Under no circumstances will red flashing lights or systems that do not specifically pinpoint a specific open door be acceptable.

**CENTRAL ELECTRICAL DISTRIBUTION AREA:**

The converter-added electrical system is to be centered around the use of a logic-controlled microprocessor built into a single circuit board.

This logic control system is required to maximize reliability of the electrical system and to minimize downtime. It must be provided in order to match the type of control system used in the chassis and to

prevent communication problems caused when dissimilar systems are employed. The design of the system must totally separate chassis operation from converter feature installations. In the unlikely event of converter component failure, the chassis must still remain operable. The computer based electrical system must utilize components similar in design to the computerized chassis functions such as the OEM cruise control system, fuel feed system, transmission control system.

**MULTIPLEXED ELECTRICAL COMMUNICATIONS SYSTEM:**

Because most chassis manufacturers have chosen multiplex electrical communication technology to operate the chassis system, this purchaser requires the same technology for the converter-added systems.

A standardized electrical control and wiring system is required. The central processing distribution board must be pre-printed and must be common in design and interchangeable between all similar models offered by the manufacturer. The vehicle manufacturer must own and control all rights to the electrical system. Standard systems controlled by outside vendors and modified for a specific vehicle or manufacturer will not be acceptable due to the unpredictability for future parts or service.

Switch panels or main boards that are not standard in design and are not interchangeable from one unit to another will not be considered. The system must consist of logic-controlled solid state circuitry installed on a pre-printed circuit board. Since solid state logic-controlled technology is commonly available and not proprietary to any one manufacturer and has been proven to be more reliable with greater benefits, a blanket exception or clarification regarding the electrical specification is not acceptable and will be cause for automatic rejection of the bid.

In addition to the main distribution board, the system will consist of a series of input or output control modules to manage and feed information and to control the various circuits required by this specification. All modules shall be pre-printed, solid state devices.

<p>Each output module must have 10 or more outputs and shall communicate with the central processing unit over a single wire. The output modules shall be capable of carrying 10 amps load per output or a total load of 50 amps per module. The total system must be capable of expanding to control at least 160 output circuits. Each input module must have 10 or more switch inputs. The total system shall be capable of expanding to handle at least 40 inputs. AMP Mate-Lock connectors shall be used for all load connections. Molex connectors shall be used for data transmission lines. Under no circumstances will systems be acceptable that utilize screw type terminals or card connectors due to their susceptibility to working loose due to vibration normally encountered on a vehicle.</p> <p>The system shall include as standard 16 analog inputs to manage information such as oxygen pressure, amperage, voltage etc. coming from an analog source. These analog inputs must be capable of being used in logic statements to enhance the operation and control of the vehicle.</p> <p>Under no circumstances may the operation of the central processing unit or the input or output modules be based upon the operation of mechanical relays. Relay based systems require higher amperage operating current and rely on mechanical contact points designed to degrade with use, creating short duty cycles for the vehicle electrical</p> <p><b>CENTRAL PROCESSING UNIT FUNCTION:</b></p> <p>The central processing unit shall be fully programmable and shall control a number of functions. The minimum functions to be controlled are as follows:</p> <ul style="list-style-type: none"> <li>-No Load Starting Circuit (as defined in subsequent sections of this specification)</li> <li>-Load Management</li> <li>-Sequenced Start Circuit Activation</li> <li>-Electrical System Diagnostics</li> <li>-Climate Control Heat/AC operation</li> <li>-Intensity Controls for Patient Dome Lights</li> <li>-Oxygen Warning System (high and low pressure)</li> <li>-All Warning Light Flashers and Flash Patterns</li> <li>-Patient Status System</li> <li>-Electrical Diagnostics</li> </ul>			
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**CIRCUIT PROTECTION:**

Each converter added electrical circuit must have circuit protection for both over current limit and over temperature condition. The circuit protection shall be provided by solid-state circuit breaker/switching devices (MOSFETS) for both the input and output wire feeds for each circuit. The circuit protection shall require no user intervention such as that required for circuit breakers or fuses. For added protection and system reliability, all MOSFETS shall have heat sinks. Lack of heat sinks will be cause for automatic rejection of the system being offered. The system shall indicate an output fault warning on the digital display in the driver control area. Should a problem occur, the warning shall identify the specific module and the output number for easy troubleshooting and to minimize the down time.

The bidder must be able to demonstrate that he has at least ten years experience with solid state logic-controlled electrical systems installed in emergency vehicles. Further, the bidder must be capable of all programming required by the system without turning to outside vendors. This includes custom-programmed items as may be delineated in this specification.

The bidder may be required to demonstrate an in production or in service vehicle in order to guarantee compliance with this requirement. Prototype or first of a kind electrical systems are not acceptable. The fire department may require the bidder to furnish specific references to further document compliance.

**SPLICE-LESS WIRING:**

Each converter-added circuit shall be powered through an individual wire that is free of any splices within the wire harness. For ease of troubleshooting and for greater reliability, one end of the wire shall plug directly into the output module and the other end shall connect to the device or the pigtail of the device being

powered.

The use of daisy-chain wiring will not be acceptable.

**WIRING:**

The following minimum wiring standards are required:

Identification

By color, by itemized number, and by actual circuit name, stamped every 4-6 inches

Size

Size will vary and will be dependent upon each wire being able to carry a minimum of 125% of the actual circuit load.

Protection of Wiring

All wiring must be run in breakaway wire loom for protection against abrasion or chafing.

**NO LOAD STARTING:**

To assure the ability to start the unit, the vehicle electrical system must have the ability to manage electrical loads during the engine startup or cranking period. The system shall automatically shut down all converter-added electrical loads when the ignition is activated and the engine is cranking. Once the engine has started, the system shall automatically turn back on all loads that were previously in the On condition. This feature must be accomplished by system programming and not by means of a relay or a series of relays which are subject to failure, thereby causing the entire converter-added electrical system to fail. Relay based systems will not be considered.

**SEQUENCED START CIRCUIT ACTIVATION:**

To prevent the heavy load burden placed on the alternator and charging system when all emergency warning circuits are activated at the same time by pre-loading the master switch, the vehicle electrical system shall automatically sequence all load-managed warning circuits so they come on one at a time. This sequenced start activation shall

be an integral part of the electrical system and shall be accomplished without the use of relays or after market add-on systems.

**ELECTRICAL SYSTEM DIAGNOSTIC CHECK:**

The electrical system must have built-in capability to self check each converter-added circuit and identify a short or open circuit by means of a single diagnostic switch. . The diagnostic system shall be operable from the drivers seat without exiting the vehicle. Diagnostic systems that are incorporated into exterior compartments, patient area interior cabinets, or remote locations will not be acceptable. The relevant information shall be displayed on the digital display on the cab switch panel.

When the operator activates the Run Diagnostic switch, the unit will initiate the systems check. The digital display shall flash the message Running Diagnostics while the check is in progress. The system must go through all outputs for the vehicle to check for malfunctions. If a malfunction is found, the display shall stop flashing and steady burn to indicate the message Module #, Output #, Fail. This message will direct the service staff to the correct output module and the correct wire number in order to troubleshoot and repair the system. Once a failure is identified, the operator may continue to run the remainder of the diagnostic by pressing the Warning Reset switch. The bidder shall furnish with the vehicle a detailed diagram indicating each input and output module number and identifying each circuit controlled by the module.

**ELECTRICAL SYSTEM SUPPORT DATA:**

Being able to service the electrical system should the need arise is of the utmost importance. To reduce the down time associated with servicing, the following information shall be provided at the time of delivery:

1. Electrical system operating instructions
2. Patient area heating/AC schematic and parts list
3. Oxygen and vacuum system schematic, parts list and leak check instructions
4. Battery and alternator schematic and

<p>system description</p> <p>5. Radio communications installation instructions</p> <p>6. Wire description list for converter added Wiring</p> <p><b>MODULE DISCONNECT DEFAULT:</b></p> <p>The 'Module Disconnect' circuit shall default to the "on" position when the battery switch is activated. Manual activation of the switch is not acceptable.</p> <p><b>BATTERY SWITCH:</b></p> <p>A two position 'On-Off' "Master" battery switch shall be installed on the vehicle within easy reach of the driver. This switch shall control power to the converter-added electrical circuits. Items specified to be wired "Battery Hot" shall not be affected by the Master battery switch.</p> <p>Under no circumstances shall this switch control the chassis O.E.M circuitry. All chassis power (ignition, headlights, etc.) shall remain as designed by the chassis builder.</p> <p><b>INVERTER/CHARGER:</b></p> <p>The vehicle converter shall furnish and install a Vanner 20-1050CUL inverter/charger. The inverter shall be located as noted below and shall power each onboard electrical outlet. There shall also be a Vanner Interface Module, Inverter Status Panel, Charger Status Panel, and Control Switch furnished and installed at the location noted below. The "Charger" portion of this unit shall be wired to the vehicle shoreline circuit.</p> <p>Inverter Location: Street side intermediate #2 compartment</p> <p>Switch Location: Inhalation Panel</p> <p><b>110V INTERIOR OUTLETS:</b></p> <p>Duplex 110V interior electrical outlets shall be installed. Quantity and location information is noted below. Each outlet shall be GFI protected and shall illuminate when powered.</p> <p>Quantity: 2</p> <p>Locate: Inhalation Area</p>			
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<p>Locate:                   Telemetry area  Locate:                   Front wall cabinet</p> <p><b>12V OUTLETS:</b>  12 volt electrical outlets shall be installed within the vehicle. Quantity, location, and adapter type are provided below.  All 12 volt outlets shall be protected by a Schottky medical isolator.</p> <p>In addition, the 12 volt outlets shall be wired through a 20 amp manual reset circuit breaker. All outlets, unless noted otherwise below, shall be battery switched. All 12 volt outlets shall be labeled.</p> <p>Adapter Type:           Cigarette Lighter Style  Quantity:                2  Locate:                  Inhalation Area  Locate:                  Front Wall Cabinet</p> <p><b>SHORELINE:</b>  The vehicle shall be equipped with a Kussmaul Super Auto Eject non-arcing shoreline. The male shoreline inlet shall be installed as noted below. This inlet shall be a straight three-prong type and shall include the female adapter plug. The shoreline shall be designed so that the plug will automatically eject from the inlet in the event that the vehicle is started while still plugged in. The shoreline shall include a hinged cover to protect it from the elements. The shoreline system shall be designed to handle a 20 amp load, and shall also include a 20 amp inline GFI breaker.</p> <p>Locate: Street Side of Module Body as Far Forward as Possible</p> <p><b>EXTRA CIRCUIT BREAKER:</b>  A Spare 15 amp manual resetting circuit breaker shall be installed as a provision for the possible installation, at a later time, of additional equipment. This feature is in addition to any prewire that may be included elsewhere within this vehicle specification. The total number of spare breakers is listed below:</p> <p>Quantity:                1</p>			
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**CAB SWITCH PANEL INSTALLATION:**

The cab control panel for the converter-added electrical circuits shall

be flush mounted in the upper face of the cab console. The mounting surface shall be angled downward so that the digital readout and switches are visible to both the driver and passenger positions.

**REVERSE ACTIVATED REAR SIDE SCENE LIGHTS:**

The rear scene lights on either side of the vehicle shall be programmed to be activated when the vehicle is placed into reverse gear. This is in addition to the other modes of operation as described elsewhere within this document. This feature shall be attained through the programming of the onboard electrical system. Systems that require additional wiring in order to provide this feature are not acceptable.

**SIDE DOOR ACTIVATED CURB SIDE SCENES:**

The curb side scene lighting shall be programmed to be activated when the patient compartment side access door is opened. This is in addition to the other modes of operation as described elsewhere within this document. This feature shall be attained through the programming of the onboard electrical system. Systems that require additional wiring in order to provide this feature are not acceptable.

**REVERSE ACTIVATED LOADING LIGHTS:**

The load lighting on the rear of the vehicle shall be programmed to be activated when the vehicle is placed into reverse gear. This is in addition to the other modes of operation as described elsewhere within this document. This feature shall be attained through the programming of the onboard electrical system. Systems that require additional wiring in order to provide this feature are not acceptable.

**MODULE DISCONNECT TIMER:**

The "Module Disconnect" circuit shall be wired to shut down when left in the 'On' position with the engine not running and the battery switch 'On.' If the shoreline is plugged in, then this feature will be disabled. Toggling the Module Disconnect

switch shall reset the circuit for an additional time interval. The time interval shall be adjustable through software programming.

**EMERGENCY BRAKE WARNING:**

When the vehicle is placed into 'Park' or 'Neutral' with the "Module Disconnect" switch 'On' and the "Red Flashing Light" switch 'On', then an audible alarm, accompanied by a visual readout on the cab console digital display, shall warn the vehicle operator to engage the emergency brake. Likewise, when the vehicle is placed into gear, then the same alarm will sound with a visual display warning the operator to disengage the emergency brake.

**BENCH ACTIVATED LOAD AND SCENE LIGHTING:**

The scene lights on either side of the vehicle, along with the rear load lights, shall have control switches installed in the patient area at the foot of the bench in the riser. These control switches are in addition to the switches in the cab control console. There shall be a total of three (3) switches at this location to control the left side, right side, and rear lighting. These shall be momentary switches of the same style used in the front and rear control consoles. These switches shall operate in the following manner:

- If the light is 'On', then the switch will turn it 'Off'.
- If the light is 'Off', the switch will turn it 'On'.
- If the lights are 'Off' because the front console light switches are 'Off', then the switch will turn the lights 'On'.
- The lights will automatically turn 'Off' after closing the rear module entry doors so that the correct pre-selection of the front

**REPORT LIGHT:**

Report lighting, as described below, shall be installed within the patient area. The fixture shall have three separate incandescent bulbs that can be illuminated either one, two, or all three at one time depending on the amount of light required. The fixture shall be controlled via two switches, one at either end. One switch will

illuminate one bulb, the other switch shall illuminate two bulbs.

Activation of both switches simultaneously will illuminate all three bulbs. The fixture will be wired through a switch on the rear electrical control panel. Activation of that switch will activate the lighting depending on the setting of the fixture switches. This design will allow for simple "one touch" operation while still providing for flexibility in terms of lighting needs.

Quantity: 1

Locate: To be determined at preconstruction Conference.

**CLOCK:**

A 6" dial battery operated clock shall be installed as follows. The clock shall feature green 12 volt fluorescent back-lighting, a second hand, 12/24 hour time, and shall be installed on a hinged panel to aid in adjusting the time and changing the battery.

Locate: Above rear doors

**STEP WELL LIGHT:**

A Weldon chrome light shall be installed in the side step well to light the step well area when the side access door is opened. The light shall be activated by a magnetic door switch installed on the door as described elsewhere within this document.

**PROGRAMMABLE LIGHT TIMER:**

A momentary switch shall be installed as noted below to operate the specified lighting with the battery switch in the 'Off' position and the shoreline plugged in. The switch shall activate a programmable timer that will automatically shut the lights off after the specified period of time.

This timer shall be field-programmable to allow the time to be adjusted after the vehicle has been delivered. The initial time setting shall be as follows:

Locate: Side entryway

Light(s) Controlled: Fluorescents

Initial Time Setting: 15 min.

**FLUORESCENT LIGHTING:**

39" Thinlite fluorescent lighting shall be installed in the patient area ceiling. Quantity and location information is provided below. The lighting shall be operable from the inhalation area control console, as well as through any other means that may be outlined elsewhere within this specification.

Quantity: 3  
Locate: Ceiling center front to back

**DOME LIGHTS:**

Weldon single filament halogen dome lights shall be installed in the patient area ceiling. Quantity and location information is listed below. The lights shall be recessed into the headliner and shall not protrude from the ceiling more than 1". Each light shall not draw more than three (3) amps at full intensity. All dome lighting shall be infinitely adjustable and shall be controlled via solid state switching at the patient area electrical control console.

Over Cot: 3  
Over Squad Bench: 3

**AUXILIARY PATIENT AREA LIGHT CONTROL:**

The lighting defined below shall be controlled as follows. This control is in addition to the method of control dictated in the preceding section.

-A switch on the front control panel can be used to activate the area lighting should it be off. The switch can also be used to deactivate the patient area lighting should it be on.

-The patient area lighting shall reset to normal operational programming should a patient area access door be opened, or if the master battery switch is turned 'off', and then 'on' again.

**AUXILIARY LIGHT CONTROL REQUIREMENTS:**

Due to the complicated requirements of the auxiliary lighting control, as described above, a circuit using additional switches and relays to achieve the same functionality is not acceptable. Added relays, switches,

wires, and connections deviates from the single wire, solid state, microprocessor-based system as outlined in this specification.

The above feature, like others that have been specified, may reduce the reliability of a relay-based system. This electrical feature, like all others on this vehicle, must be attained through solid state microprocessor-based technology.

**PANEL LIGHT:**

A Hella goose neck panel light shall be installed at the location described below. An 'On/Off' switch shall be incorporated into the light fixture.

Quantity: 1  
Locate: Cab Console

**HAND HELD SPOT LIGHT:**

An Optronics 400,000 CP hand-held spot light shall be installed in the cab area. The light shall include a momentary switch for activation. A bracket shall be included to hold the light when it is not in use. This bracket shall provide quick and simple access to the light. Retention designs that require two hands to remove the light for operation will not be acceptable.

Locate: Behind driver's seat on the aisle side.

**PREWIRE FOR FUTURE STREAMLIGHT INSTALLATION:**

Prewire shall be provided as noted below for future installation of Streamlight charger bases.

Quantity: 2  
Locate: To be determined at pre-construction conference.

**AUXILIARY BRAKE LIGHTING:**

The rear red flashing lights, as specified elsewhere within this document, shall be wired so that they illuminate when the brake pedal is depressed. This lighting is in addition to the specified brake/tail lights.

Configure: Emergency lighting is to override this feature.

**HEATING AND AIR CONDITIONING:**

A temperature control system is desired that provides quick and simple operation while maintaining a uniform temperature throughout the patient compartment. The unit itself must be located so that it is easy to access for service. This location must also be near the O.E.M. heat/AC connection points when provided so as to increase the overall efficiency of the unit. The following minimum design standards must be adhered to in order to best meet the needs of this purchaser.

**SYSTEM CONTROLS:**

The climate control functions shall be controlled through a primary location in the inhalation panel, and through a secondary location in the cab electrical control console. The switches used for the operation of this system shall be identical to the switches described in the "Electrical" section of this specification. Switches shall be present in the front console to select either 'Heat', 'A/C', or 'Off' functions and to select the desired temperature. Switches shall be present in the rear control panel to select either 'Heat', 'A/C', or 'Off' functions, 'Automatic' or 'Manual' mode of operation, and to select the desired temperature.

**THERMOSTAT:**

The temperature level shall be adjustable from both the front and rear electrical control panels for the 12V system. Two switches at each location shall be used to scroll through desired temperature settings on one degree intervals. Once the desired temperature is set, then the system shall retain that setting regardless of the position of the battery switch. The temperature sensor for the system shall be located at the inhalation panel so as to attain a true patient compartment temperature. The temperature setting and the actual temperature reading shall be viewable from both the front or rear digital displays.

This system is to be controlled through the converter-added electrical system.

Under no circumstances shall household type thermostats be acceptable.

**SYSTEM OPERATION:**

The system shall allow for both automatic and manual operation. When set to the manual mode the fan speed shall be infinitely adjustable from the rear control panel for extra ventilation. When set to the automatic mode the fan speed shall be controlled by the thermostat setting. The temperature that is selected shall be continuously maintained. When the selected temperature has been reached, then the system shall automatically cycle the fan speed down to reduce unnecessary electrical load.

**HEATER WATER CONTROL:**

The flow of hot water from the chassis to the converter-added heat/AC system shall be controlled by an electrically operated valve located under the hood. Water flow to the rear heater shall be activated when either the front or rear heater switch is turned to the 'On' position.

It is a requirement of this specification that this type of valve be used unless the converter is supplying a self-contained heat-AC system.

The term "self-contained" is defined as being a unit that does not require any water flow from the chassis. Under no circumstances will manual valves be considered.

**UNIT LOCATION AND SERVICE:**

It is required that the heat/AC unit be installed inside a custom-made aluminum box beneath the attendant's seat. This box shall be perforated to provide air flow to the heat/AC unit mounted beneath the seat. This is required for efficiency, serviceability, and safety.

The attendant's seat shall be installed on a hinged top cover for the aluminum heat/AC system housing. This allows the seat to be hinged forward and out of the way for service work. The unit will be accessible by removing two bolts located behind the seat and lifting the seat forward as opposed to dismantling cabinetry, etc.

In the unlikely event of a system leak the specified installation location will allow the leakage to run out onto the ground. Systems that are installed above cabinetry may leak into the cabinets, thus ruining the cabinets (if they are wood) and the cabinet contents.

**FILTRATION SYSTEM:**

A replaceable carbon filter shall be installed at the air intake area of the heat/AC system. Replacement of the filter shall be simple, and shall require very little time so as to assure that the vehicle will not have to be taken out of service. Replacement filters shall be readily available and shall be capable of being cut to the proper size to fit the vehicle.

**AIR FLOW:**

The installation of the heat/AC system shall include an air duct system to direct the airflow in such a way as to provide uniform temperature levels throughout the patient compartment. Air intake shall be from the floor level. The air shall be channeled through a duct that is aft of the heat/AC unit. The air shall exit through adjustable vents at the ceiling level above the attendant's seat. This design will allow for a circular flow of air throughout the patient compartment.

The specified design will separate the intake and exhaust ports. Separation of the intake and exhaust will decrease air turbulence and improve overall efficiency of the system. Systems that combine intakes and exhausts within the same grille work will not be acceptable.

**12V HEAT/AC SYSTEM:**

The 12V heat/AC system shall be installed per the instructions listed above. The BTU and CFM ratings on this unit shall be as follows:

Heat: 65,000BTU  
A/C: 32,000BTU  
CFM: 650

**SIDE MOUNTED POWER VENT:**

A chrome plated Perko power vent shall be installed on the module body side. The vent shall provide for the removal of air from within the patient area. The intake for this vent shall be in the patient area ceiling. This vent shall be wired through a switch located in the rear control panel. This vent shall also be capable of being manually closed from within the patient area.

**CO MONITOR:**

A 12V carbon monoxide detector shall be installed in the patient area near the rear doors. The device shall mirror the build up of carbon monoxide in the human bloodstream. An alarm and health hazard display shall warn of toxic accumulation.

**CAB CONSOLE AND COMMUNICATIONS:**

The vehicle communications and console features are designated below:

**ANTENNA COAX #1:**

An RG 58U coax shall be installed. A removable access plate in the patient area ceiling shall be provided for access to the exterior termination point located on the module body roof. Under no circumstances shall the vehicle design necessitate disassembly of the interior finish work to access the coax termination point

The termination point of the coax shall be determined at the pre-construction conference.

**ANTENNA COAX #2:**

A second RG 58U coax shall be installed. A removable access plate in the patient area ceiling shall be provided for access to the exterior termination point located on the module body roof. Under no circumstances shall the vehicle design necessitate disassembly of the interior finish work to access the coax termination point. The termination point of the coax shall be determined at the pre-construction conference

<p><b>ANTENNA COAX #3:</b></p> <p>A third RG 58U coax shall be installed. A removable access plate in the patient area ceiling shall be provided for access to the exterior termination point located on the module body roof.</p> <p>Under no circumstances shall the vehicle design necessitate disassembly of the interior finish work to access the coax termination point.</p> <p>The termination point of the coax shall be determined at the pre-construction conference.</p> <p><b>NMO ANTENNA BASE:</b></p> <p>The vehicle converter shall provide and install an NMO antenna mount.</p> <p>The mount shall be located per the information listed below and shall utilize coax cable as specified above. The location for the mount will be determined at the pre-construction conference.</p> <p>A pull wire shall be installed to aid radio cable installation and prevent removal of interior panels once the vehicle has been completed.</p> <p><b>RADIO / STORAGE CONSOLE:</b></p> <p>A console shall be installed in the cab. The console shall be installed at floor level and shall allow space for siren and radio head installation. The console shall be color coordinated with the cab interior. The top of the console shall be on a slant and shall house the recessed emergency control panel and integral digital display.</p> <p>Under no circumstances shall the console interfere with the OEM vehicle controls or gauges, nor shall the control panel be installed in such a manner as to interfere with either the OEM vehicle controls, gauges, or the driver's line of vision.</p> <p>The console will be custom designed to accommodate a laptop mount and glove storage dispenser.</p> <p><b>RADIO POWER/GROUND:</b></p> <p>The vehicle manufacturer shall install heavy gauge cable B positive and ground for radio</p>			
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power. Termination is to be to insulated studs.

Locate: Behind Driver Seat  
Status: Battery Switched

**OXYGEN AND SUCTION SYSTEMS:**

Reliability, safety, and ease of operation are essential characteristics of the onboard oxygen and suction systems. System design must meet the following minimum guidelines. Bidders are asked to respond to each section appropriately per the bid requirements and to explain any variations to these requirements.

**SWITCHING FOR OXYGEN AND SUCTION:**

The rear switch panel shall contain two switches labeled "OXYGEN" and "VACUUM". Each of these switches shall electrically activate those respective systems.

That activation shall be instantaneous. Systems that are not instantaneously responsive to their activation will not be considered.

**SYSTEM DESIGN:**

A single piece manifold assembly shall serve as the basis for the oxygen delivery system. The manifold assembly shall incorporate ports for installation of O2 lines to all specified outlets, an electrically activated oxygen delivery solenoid, and a manual bypass valve. The assembly shall be installed behind the inhalation panel and shall be easily accessible.

**ELECTRICAL OXYGEN ACTIVATION:**

The switch, located on the rear control panel and labeled "OXYGEN", shall activate the solenoid. This design will allow for the instantaneous flow of oxygen while eliminating the need to manually turn a valve to initiate oxygen flow.

**MANUAL BYPASS:**

The oxygen solenoid shall be equipped with a manual bypass valve.

Located behind the inhalation panel, the valve shall be easily accessible so that, in the unlikely event of an electrical failure, administration of oxygen may continue.

**SYSTEM REGULATION:**

The patient area shall be free of high pressure oxygen lines. To accomplish this the vehicle converter shall install a KKK approved regulator at the oxygen cylinder. The regulator shall include an integral dial type gauge to monitor the cylinder contents. A single low pressure line shall be installed from the regulator to the O2 manifold assembly. This method shall insure that all high pressure is maintained in an exterior compartment away from the interior patient

**OXYGEN LINES:**

The O2 line connecting the regulator to the manifold assembly shall be rated at 200 psi working pressure and 1,250 psi burst pressure. The line shall be UL approved. There shall be NO connections installed in the line between the regulator and manifold assembly as these create a possibility for leakage. All connections shall be DISS style and shall be specific to the gas being supplied.

**LINE PROTECTION:**

The O2 line shall be protected from crimping through the installation of a flexible spring guard on the portion of the line in the cylinder storage compartment.

**SYSTEM MONITORING:**

The condition of the oxygen system shall be continually monitored and reported to the vehicle operators through the vehicle's onboard electrical system. Digital readouts containing the information listed below shall be available primarily at the patient area control console.

The secondary location for availability of this information shall be the cab console. The information available shall include the following:

- Cylinder Pressure
- Line Pressure

In addition, this system shall be designed to offer a warning, both audible and visual, if the condition of the oxygen system falls outside of the following pre-programmed parameters:

- Low Cylinder Pressure (500 psi or below)
- Low Line Pressure (40 psi or below)
- High Line Pressure (75 psi or above)

These oxygen system warnings shall immediately notify the personnel of a problem, again, via a digital readout and audible alarm.

**PRELIMINARY SYSTEM TESTING:**

The oxygen system shall be tested prior to installation in the vehicle. This test shall be performed by the vehicle manufacturer and shall subject the system to three times (3X) the working pressure. This test shall be conducted for a minimum of four (4) hours.

**FINAL SYSTEM TESTING:**

The completed system shall be tested again once it is installed in the vehicle. This test shall be performed at working pressure for a minimum of four (4) hours. After the system has passed the inspection process it shall be capped and tagged per Federal KKK specifications.

**ADDITIONAL OXYGEN AND VACUUM SUPPLIES:**

The oxygen and suction systems shall be complete upon delivery with the exception of the O2 cylinder. The cylinder shall be supplied and installed by the purchaser after delivery of the vehicle has taken place.

**OXYGEN BOTTLE MOUNT, VERTICAL TRACK FOR QRM-V:**

QRM-V O2 bottle mount shall be attached to the slide out tray in the #1 compartment on the drivers side.

The O2 bottle mount is adjustable for "M" or "H" size tanks.

**ZICO QRM-V CYLINDER BRACKET:**

A Zico QRM-V oxygen cylinder bracket shall be installed in the main O2 compartment.

**OXYGEN OUTLETS:**

Two oxygen outlets shall be installed in the rear inhalation panel unless otherwise noted below.

**ADDITIONAL OXYGEN OUTLETS:**

Additional oxygen outlets shall be installed as noted below.

Quantity: One  
Locate: Curb side wall

**NCG STYLE OXYGEN AND SUCTION OUTLETS:**

The oxygen and suction outlets installed in the vehicle shall be NCG style outlets.

**FLOWMETER:**

Dial type flowmeter(s), in the quantity listed below, shall be supplied with the completed vehicle. Each flowmeter shall be supplied with a mating quick connect adapter. The flowmeter shall provide a maximum flow of 25 LPM.

Quantity: 2

**CYLINDER WRENCH:**

A cylinder wrench shall be installed inside the oxygen compartment. The wrench shall be installed in such a way as it will not move or rattle. The wrench shall be chained to the compartment so that it cannot be removed, however, the chain must not interfere with the operation of the wrench.

**PRIMARY VACUUM OUTLET:**

A single vacuum panel shall be installed in the inhalation area. The outlet shall be of the same style as those of the oxygen system and shall be connected to the onboard vacuum pump.

**SSCOR ASPIRATOR:**

The manufacturer shall furnish and install an SSCOR suction system. The system shall include a #107CDC20 pump, a #22000 wall-mounted regulator, and a #23002 canister holder. The aspirator shall be accessible for use from the inhalation area per the attached prints.

**SPECIAL INSTRUCTION, OXYGEN & SUCTION**

Dealer shall supply a LSP Minilator and leave loose in the vehicle.

**LETTERING DESIGN:**

This specification calls for lettering to be supplied and installed by the successful bidder. The lettering layout is summarized within this section and broken down by location in the sections below.

Information relative to lettering material, size, color, font, or any other special requirements will be provided by the departments buying from this contract.

Color: GOLD WITH BLACK SHADE & OUTLINE  
Style: Photo's will be provided

**LETTERING REQUIRED ON CAB DOORS:**

The lettering described below shall be furnished and installed per these instructions prior to delivery of the completed vehicle to the purchaser.

Configure: Community lettering - 4" height

**LETTERING REQUIRED ON CURBSIDE OF BODY:**

The lettering described below shall be furnished and installed per these instructions prior to delivery of the completed vehicle to the purchaser.

Configure: "Dial 911" at break in belt stripe

"A??" Unit # on side - White reflective Scotchlite

Photo's will be provided.

**LETTERING REQUIRED ON FRONT OF VEHICLE:**

The lettering described below shall be furnished and installed per these instructions prior to delivery of the completed vehicle to the purchaser.

Configure:"A??" Unit number on front.  
Photo's will be provided.

**LETTERING REQUIRED ON REAR OF VEHICLE:**

The lettering described below shall be furnished and installed per these instructions prior to delivery of the completed vehicle to the purchaser.

Configure: "A??" Unit # on rear - Material:  
White reflective Scotchlite

Configure: Community lettering on rear - 6"  
height

**LETTERING REQUIRED ON STREET SIDE OF BODY:**

The lettering described below shall be furnished and installed per these instructions prior to delivery of the completed vehicle to the purchaser.

Configure: "Dial 911" at break in belt stripe  
- See drawings  
"A??" Unit # on side - White reflective  
Scotchlite

Photo's will be provided.

**LETTERING REQUIRED ON MODULE BODY ROOF:**

The lettering described below shall be furnished and installed per these instructions prior to delivery of the completed vehicle to the purchaser.

Configure: "A??" Unit number on roof (approx  
24" tall)

Lettering shall be applied to a 24" x 24"  
aluminum plate painted job color. Lettering  
shall be: White reflective.

The aluminum plate shall be a minimum .375 of  
an inch thick. Tracks shall be attached to  
the roof to retain the plate in place. The  
tracks will retain three (3) sides of the  
plate. The plate shall be held in place with  
a positive lock clip. Photo's will be  
provided.

**4" SHADED GOLD LETTERING:**

The successful bidder shall supply and install a total quantity of letters as specifically described and noted below. This lettering shall be 4", gold that is outlined, and shaded.

A Mylar laminate shall be applied to the lettering surface in order to protect against scuffing and provide added longevity. lettering that does not have this protective covering is not acceptable. The precise letters to be manufactured utilizing this material are noted above. Refer to photo's for the following information.

- Quantity:
- Shade Color:
- Shade Direction:
- Font:

**6" SHADED GOLD LETTERING:**

The successful bidder shall supply and install a total quantity of letters as specifically described and noted below. This lettering shall be 3", gold that is turned by hand, outlined, and shaded.

A Mylar laminate shall be applied to the lettering surface in order to protect against scuffing and provide added longevity. Lettering that does not have this protective covering is not acceptable. The precise letters to be manufactured utilizing this material are noted above.

- Quantity:
- Shade Color:
- Shade Direction:
- Font:

Refer to Photo's

**12" STAR OF LIFE EMBLEM:**

The bidder shall supply and install the 'Star of Life' emblem(s) requested by the purchaser. The total quantity required is noted below.

The emblems shall be made from 12" white Scotchlite that is silk screened in blue. A Mylar laminate shall then be applied to the emblem's surface in order to protect against

scuffing, and to provide added longevity. Emblems that do not have this protective covering are not acceptable.

Quantity: Two

**18" STAR OF LIFE EMBLEM:**

The bidder shall supply and install the 'Star of Life' emblem(s) requested by the purchaser. The total quantity required is noted below.

The emblems shall be made from 18" white Scotchlite that is silk screened in blue. A Mylar laminate shall then be applied to the emblem's surface in order to protect against scuffing, and to provide added longevity. Emblems that do not have this protective covering are not acceptable.

Quantity: 2

**36" STAR OF LIFE EMBLEM:**

The bidder shall supply and install the 'Star of Life' emblem(s) requested by the purchaser. The total quantity required is noted below. The emblems shall be made from 36" white Scotchlite that is silk screened in blue. A Mylar laminate shall then be applied to the emblem's surface in order to protect against scuffing, and to provide added longevity. Emblems that do not have this protective covering are not acceptable.

Quantity: One

**CUSTOM LETTERING:**

The successful bidder shall supply and install the lettering described below. The locations for the installation are noted in the "Layout" section of these specifications. This lettering is not typically provided as a standard lettering style by most manufacturers. Therefore, it has been deemed to be custom. The purchaser will provide photographs and, when possible, artwork pertaining to this lettering to the successful bidder. A Mylar laminate shall then be applied to the lettering's surface in order to protect against scuffing, and to provide added longevity. Lettering that does not have this protective covering will not be acceptable.

- \* SPECIAL "DIAL 911" DECALS PER PHOTOS
- \* "A2?" DECAL IN WHITE SCOTCHLITE ON EACH SIDE AT REAR, STREETSIDE REAR PANEL, CURBSIDE FRONT PANEL PER PHOTOS
- \* INSTALL BLACK SCOTCHLITE 24" HIGH "A2?" ON FRONT OF MODULE ROOF

\*\* Running height warning sticker to be installed in chassis cab.

**REMOVABLE PLACARDS:**

A three sided sign holder will be provided on all sides of the patient module. Tracks shall be aluminum angle permanently affixed to the exterior walls of the module. The location to be determined.

The identification plates shall be constructed of at least .25 of an inch thick aluminum plate measuring 14" high x 20" long.

Placards shall be painted job color.

Lettering on the placards shall be white reflective with black outline approximately 8 inches tall and proportionate in width.

**SPECIAL INSTRUCTION, CAB CONSOLE & COMMUNICATIONS**

Vehicle to have a customer supplied Motorola MCS2000 Radio installed in the vehicle. Midvale FD will make an older vehicle available to remove the radio system which will then be installed in the new truck in a timely manner.

**SPECIAL INSTRUCTION, CAB CONSOLE & COMMUNICATIONS**

The vehicle shall be equipped with a dealer supplied Laptop Computer Mount which will be installed on a reinforced point on the top of the console.