

# DEMERS TYPE I MXP150

## SPECIFICATION FOR TYPE I

### SCOPE

The ambulance specification documented here establishes requirements for a new automotive emergency medical services (EMS) ground vehicle used for out-of-hospital medical care and patient transport. The term *new* as applied in this standard is intended to refer to the original construction of an ambulance using all new materials and parts.

### PURPOSE

The purpose of this document is to specify the purchaser's requirements, performance parameters, and essential criteria for the design this ambulance. This document shall layout exacting details and shall have accompanied drawings to clearly and accurately specify the ambulance.

### APPLICATION

This specification shall apply to vehicles intended for use in both emergency and non-emergency operations. Vehicles proposed by the bidders must be new for the current ambulance manufacturers and chassis manufacturer's model year. Bidders shall not propose ambulances that are refurbished or remounted.

### EQUIVALENCY

This specification is intended to provide the bidder the guidelines and parameter of the ambulance to be purchased. This specification shall not prevent the bidder from bidding their standard or proposed ambulance. Many of the components specified here can be procured from common vendors. In those instances, the model or brand specified shall be used. The bidder is encouraged to propose a like model for those items in this specification which they cannot comply to. Alternative construction and design methods detailed by the bidder shall not be cause for automatic rejection. The specification for this ambulance has a desired level of quality and workmanship. In instances where exceptions and clarifications are necessary, detailed descriptions and photographs may be used.

# DEMERS TYPE I MXP150

Each section requiring a response shall be marked by the bidder to acknowledge acceptance and compliance to the specification. Should the bidder choose not to comply with the specified requirements, the bidder shall indicate on the bid proposal whether they choose to include an exception. The bidder shall disclose to the purchaser what they are offering in comparison.

## EXCEPTIONS

Exceptions to the proposal shall be documented in a centralized location in this bid proposal. The exceptions section of the proposal shall include the section heading, the page number and a detailed description of what shall be proposed by the bidder. Bidders taking 'total exception' shall not be allowed and will be considered unresponsive as this disregards the purchasers request of a comparable product.

Exceptions shall include the heading of the section being clarified, the page number and a full written explanation of the deviation from the specification. Exceptions with descriptions claiming they meet or exceed the specification with no backing documentation will be considered non responsive and subject to disqualification.

## DRAWINGS

The ambulance proposal shall include computer aided design (CAD) drawings for the model specified here. Sales drawings modeled in 2 dimensions shall be acceptable for this proposal. The bidder shall not accept standard model or generic drawings as these are not an accurate depiction of the vehicle specified. Drawings provided "upon request" shall not be permitted by the purchaser.

Upon acceptance of the proposal and finalization of the order, the bidder shall have 3D modeled drawings to complete the ambulance. These 3D models shall be available to view at the purchasers request during the build process. To maintain a level of quality and craftsmanship, the entire ambulance shall be modeled with 3D CAD software before any fabrication begins. Manufacturers utilizing a different engineered drawing method shall document this in the exceptions section of this document.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## REFERENCED PUBLICATIONS

## GENERAL

This ambulance specification specifically sites documents or portions of the documents listed below. It is the bidder's responsibility to ensure the ambulance proposed meets the requirements set forth in the documents listed in this specification.

## GENERAL REQUIREMENTS

### RESPONSIBILITY OF THE PURCHASER

It shall be the responsibility of the purchaser to consider the amount of equipment and personnel that will be carried on the ambulance and to specify a minimum usable payload that will accommodate this weight once the ambulance is placed in service. It shall be the responsibility of the purchaser to specify any details of the ambulance that would exceed the minimum specifications of this standard. After acceptance of the ambulance, the purchaser shall be responsible for ongoing training of personnel to develop and maintain proficiency regarding the proper and safe use of the ambulance and the associated equipment.

### RESPONSIBILITY OF THE CONTRACTOR

The bidder shall provide a detailed description of the ambulance with the proposal along with a list of equipment to be furnished. Documentation of all testing data detailed in this specification shall be included in the bid proposal when requested. Failure to comply with this requirement is considered to be non-responsive and will be subject to rejection for this cause.

The detailed description of the ambulance shall include, but shall not be limited to, minimum usable payload, wheelbase, curb-to-curb turning clearance radius, principal dimensions, angle of approach, and angle of departure per the requirements detailed in the forthcoming edition of the NFPA 1917 Standard for Automotive Ambulances guidelines and the KKK 1822-A-F revision of the Federal Ambulance Specifications. The bidder's detailed description shall include exceptions and clarifications clearly defining each section of the proposal not be fully compliant with the requirements of detailed specification defined here.

# DEMERS TYPE I MXP150

The bidder shall supply a copy of their specifications with this bid proposal. The purpose of these bidders specifications shall clearly define what the contractor intends to furnish and deliver to the purchaser. Responsibility for the ambulance and no customer supplied equipment shall remain with the contractor until they are accepted by the purchaser.

## MANUFACTURING CAPABILITY

The ambulance manufacturers shall use a continuous flow production system to assemble their models of ambulances. The advantage of this continuous flow system is the entire assembly of the vehicle is broken down into logical assembly phases to which resources are attributed and properly trained.

The manufacturer supplier base shall be horizontally integrated. Therefore; the manufacturer shall have a light supplier base able to supply the manufacturer with a vast array of components. The advantage of horizontally integrated supplier is being able to rapidly respond to fluctuations in product and that is being able to meet production demands during peak periods.

The ambulance manufacturer's production facility shall be capable of producing over 500 units any given fiscal or calendar year. The manufacturer shall have produced at least 500 units of varying models for the last 5 years consecutively. Documentation of the quantity of these manufactured products shall be provided at the purchaser's request. The manufacturer shall also provide a list of like models to the purchaser upon request. This list shall include the contact information of the customer's these models were purchased.

The manufacturer shall be able to accurately schedule the ambulance into its production cycle to give an accurate deadline of completion from the time of the signed accepted order. The bidder shall note on a pricing page of this proposal the proposed lead time of the completed unit.

## QUALITY PROCESSES

A manufacturer's internal quality process system shall be in place. This quality processed system shall conform to ISO-9001 specifications. To ensure the quality system is continually maintain the manufacturer shall be audited by an independent agency. Documentation of this internal quality process system shall be provided upon request of the purchaser.

## TESTING CAPABILITIES

The ambulance manufacturer shall be equipped to do a majority of the ambulance testing at their facility. An exception shall be for heating and cooling tests would require a top climate chamber. All pull tests, load tests,

## DEMERS TYPE I MXP150

(including the module load test), lighting levels, noise levels, and pressure tests shall be done in this on site facility. The manufacturer shall have a full range of testing equipment proven by an independent engineering agency. In-house testing facilities are preferred by this purchaser as this gives the manufacturer flexibility to perform tests and various designs on a continual basis. All testing shall be audited and documented by a third-party accredited, approved, engineering agency.

If the Ambulance manufacturer does not have its own testing facility on-site, a detailed description of how continual testing is provided shall be detailed in the bid proposal. No exceptions shall be allowed to this requirement.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### TESTING REQUIREMENTS

The bidding manufacturer shall be capable of passing testing certifications for North America. All testing performed shall be to the highest requirement set forth in any of the North American standards listed here. The manufacturer shall be able to provide testing or certification results for the following requirements. Copies of testing documentation and certification for the following standards shall be provided with this proposal:

- **AMD:** Ambulance Manufacturers Division of the National Truck Equipment Association (**NTEA**)
- **KKK:** Federal Specification for the Star of Life Ambulance (KKK-A-1822F)
- **FMVSS:** US Federal Motor Vehicle Safety Standards and Regulations
- **DOT:** US Department of Transportation
- **INTERIOR CABINETY PULL TEST RESULTS:** Interior cabinetry pull tested to a minimum of 8000 lbs.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### DELIVERY CAPABILITY

The completed ambulance shall be delivered to the end user under its own power by the manufacturer or a manufacturer's representative. This vehicle shall be complete on or before the designated delivery date.

# DEMERS TYPE I MXP150

## DELIVERY

The manufacturer shall deliver the completed ambulance in \_\_\_\_ calendar days after acceptance of the formal contract from the purchaser.

The manufacturer shall not be held liable for changes arising from its failure to make or delay in making delivery because of fire, flood, strike, riot, chassis shortage, accidents, acts of force majeure, or any circumstances beyond the bidding manufacturer's control.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

## AMBULANCE COMPONENTS

All components shall be installed in accordance with the applicable manufacturer's installation instructions. The emergency medical care vehicles; including chassis, ambulance body, equipment, devices, medical accessories, and electronic equipment shall be standard commercial products, tested and certified to meet or exceed the requirements of this standard. All medical devices furnished shall comply with Food and Drug Administration (FDA) regulatory requirements. Vehicles shall be free from defects that may impair their serviceability or detract from appearance. All bodies, systems, equipment, and interfaces with the chassis shall be done in accordance with the OEM Body Builders Book.

## LEGAL REQUIREMENTS

The ambulance shall comply with the following applicable Federal Motor Vehicle Safety Standards (FMVSS), and state regulations as specified by the purchaser.

# DEMERS TYPE I MXP150

## LIABILITY

The bidding manufacturer shall furnish a Certificate of Insurance showing an aggregate of liability insurance which shall not be less than eleven million dollars (\$11,000,000.00). This general liability Certificate of Insurance shall be provided by the manufacturer's insurer. Failure to provide a Certification of Insurance shall be considered non-responsive and cause for rejection of the proposal.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## BID BOND

The bidding manufacturer shall furnish a bid surety bond for the amount of \_\_\_% of the total price of this bid proposal. The surety shall be in the form of a bond only. Any surety not in the form of a bond shall not be accepted by the purchaser and shall be cause for rejection of the proposal.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## THIRD-PARTY CERTIFICATION OF TEST RESULTS

All testing shall be approved of by an independent third-party organization not affiliated with the primary ambulance manufacturer or its primary suppliers. This organization shall be accredited for inspection of ambulances in accordance with ISO/IEC 17020, *General Criteria For The Operation Of Various Types Of Bodies Performing Inspection*. This third party testing facility and organization shall recognized by a signatory to the International Laboratory Accreditation Cooperation (ILAC) Mutual Recognition Arrangement (MRA).

The certification organization shall not be owned or controlled by manufacturers or vendors of the product that is being tested. The certification organization shall witness all tests and shall refuse to certify any test results for a system if all components of that system requiring testing do not pass the testing required by this standard. There shall be no conditional, temporary, or partial certification of test results. Forms or data sheets not required in this bid proposal and used during the testing and shall be made available to the purchaser upon request.

Continual testing programs shall be in place for training, proficiency testing, and performance verification. The ambulance manufacturer shall have testing facilities on their premises to efficiently test new products and models.

## DEMERS TYPE I MXP150

All testing shall be reported, confirmed and approved by the third party testing facility. The bidder shall provide a description of how continual testing is completed by the manufacturer.

Certification letters submitted for the ambulance model, components, and equipment being certified shall contain the following information on contractor's letterhead stationery in electronic format (pdf files):

- (1) To whom certifying
- (2) Date
- (3) Units or items
- (4) Contractor and address
- (5) Date product tested
- (6) Model number and specification data
- (7) Applicable specification references and test requirement
- (8) Summary of the test report
- (9) A certifying statement with official signature

The testing facility for each certification shall supply the following supportive verification data and information on letterhead stationery in electronic format (pdf files):

- (1) For whom tested
- (2) Report date
- (3) Name of sample product or device
- (4) Contractor's address
- (5) Serial and model number(s)
- (6) Specification referral and amendment number(s), and test requirement(s)
- (7) Test facilities used and location
- (8) Test equipment used
- (9) Test procedure
- (10) Test results
- (11) Verifying test data
- (12) Photographs
- (13) Test conclusion(s)
- (14) Witness(es)
- (15) Authorized signature

A representative of the manufacturer shall witness all tests and shall refuse to certify any test results for a system unless all components of that system requiring testing pass the testing required by this standard. The purchaser shall not accept testing results that are deemed conditional, temporary, or partial certification. The manufacturer shall have facilities on site and certified testing equipment necessary to conduct the required testing

# DEMERS TYPE I MXP150

Appropriate and easy to interpret data sheets shall be provided and used during all testing. All testing results shall be able to be provided to the purchaser upon request if not specified. The ambulance manufacturer shall have established programs in place for training, proficiency testing, and performance verification of any personnel involved with certification. An official of the company that manufactures or installs the product shall designate in writing those qualified to witness tests and certify results with the organization.

Certification documentation shall be delivered with the ambulance, including results of the certification tests. Certification tests performed on a substantially similar ambulance shall be valid for up to 7 years. Each model the manufacturer offers shall be tested and certified. The purchaser will not accept testing certification on the largest model size as a “blanket certification” for all models.

## PERSONNEL PROTECTION

Protection in the form of guards and shields shall be provided on the completed ambulance to prevent injury of personnel by temperature sensitive, moving, or rotating parts during non-maintenance operations. Access to these areas shall be restricted yet still accessible for qualified technicians to perform maintenance when necessary. Electrical insulation or isolation shall be provided on all electrical components to prevent electrical shock from onboard electrical systems. Electrical systems and wiring shall be properly secured in the electrical control panel to prevent accidental entry or storage in these areas.

The completed ambulance shall be free of sharp edges and protrusions that could injure during routine maintenance or while the vehicle is in motion. All Safety-related signs on the completed ambulance shall meet the requirements of ANSI Z535.4, *Product Safety Signs and Labels*.

## CONTROLS AND INSTRUCTIONS

All controls, switches, instruments, gauges and controls shall have adequate illumination for the ambulance equipment and accessories. The illumination of all controls shall be low voltage and not put unnecessary burden on the electrical system.

All required signs, instruction plates, and labels related to the electrical system shall be permanently attached and easy to read. All signage and labeling shall be resistant to fluids, extreme temperatures (–30°F and 176°F (–35°C and 80°C)), and ultra violet radiation. These labels shall meet the UL 969, *Standard for Marking and Labeling Systems*. All exterior labels relating to safety or critical operational instructions shall be reflective or illuminated per the guidelines set forth in the forthcoming NFPA 1917 Standard for Automotive Ambulance Guidelines.

# DEMERS TYPE I MXP150

## CONTROLS AND SWITCHES.

Controls and switches that are expected to be operated by the belted driver while the ambulance is in motion shall be visible and within reach. The control switches shall be easy to read, incorporate easy to read universal diagrams to allow the operator to rely on peripheral vision to assist in activating the switches while the ambulance is in motion. Switches shall be located in such a position where the driver does not have to move his or her head up or down to activate or read the control switches.

Controls and switches in the rear patient compartment shall be easy to activate from a belted position while the ambulance is in motion. All switches shall be visible, and clearly labeled.

Switches, indicators, and control devices shall be perceptively and permanently identified with universal automotive graphics or at least 12 point letters for the noun or function, and 8 point letters for the remainder of the legend. When lettering is used, the words shall be written in the primary language of the location of the ambulance.

For ease of Identification, the controls and switches shall be contrasting colors etched or engraved in plastic or metal, or printed and laminated in see through plastic, and logically grouped according to function. The switches shall have a different feel from the OEM switches and controls on the front dash console. All switches and controls detailed here shall be mounted in illuminated or backlit panel(s), or the console.

## OPTIONAL TOUCH SCREENS

Touch screens, touch pads or other heads up display consoles are permitted. Each control and function shall be clearly identified and shall meet the lighting and description of the Controls and Switches section listed above. Touch screen graphical displays shall also be contoured and designed to reduce glare from natural daylight and shall have a dimming feature to reduce eye fatigue during nighttime operation. Touch screen displays incorporating buttons shall meet the same requirements as the Controls and Switches section detailed above in regard to a different tactile feel of the button and the markings on the button.

The exact electrical system specified for the completed ambulance shall be identified in the electrical section of this bid proposal.

## COMPONENT PROTECTION

All manufacturer or supplier supplied hose lines, air system tubing, control cords, and electrical harnesses shall be mechanically attached to the frame or body structure of the ambulance. All exposed tubing, electrical wiring and

## DEMERS TYPE I MXP150

hoses shall be contained in a loom or an insulated covering on both the exterior and interior of the ambulance. Were hoses and electrical wiring looms are passing through a metal edges; a protective grommet shall be installed in the hole to prevent premature wear on the loom or hose. Exposed wires and hoses shall not be permitted as this poses a potential hazard and could cause premature failure of critical components on the completed ambulance.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### AMBULANCE PERFORMANCE

The ambulance shall meet the requirements of this standard at elevations of 2,000 ft. (600 m) above sea level. The ambulance shall meet all the requirements of this standard while stationary on a grade of 6 percent in any direction. Where temperature requirements are not otherwise specified, the ambulance shall be designed to function in ambient temperature conditions between -20°F (-29°C) and 110°F (43°C). The ambulance shall be capable of being driven for at least 250 mi (402 km) without refueling. The vehicle shall be capable of three fordings, without water entering patient and equipment compartments while being driven through a minimum of 8 in. (203 mm) of water, at speeds of 5 mph (8 km/hr.), for a distance of at least 100 ft. (30 m).

### SERVICEABILITY

The ambulance shall be designed so that all the manufacturer's recommended routine maintenance checks of lubricant and fluid levels can be performed by the operator without the need for hand tools. Ambulance components that interfere with repair or removal of other major components shall be attached with fasteners, such as cap screws and nuts, so that the components can be removed and installed with ordinary hand tools. These components shall not be welded or otherwise permanently secured into place.

In the event of repair (warranty or non-warranty), the manufacturer shall have approved service centers to assist in maintaining and repairing the ambulance. A list of the approved service centers shall be provided upon request of the purchaser.

### TESTS ON DELIVERY

If acceptance tests are required at the point of delivery, the purchaser shall specify the details of the tests to be performed, and shall not be performed in a manner that requires the ambulance or a component to operate outside

# DEMERS TYPE I MXP150

its designed operating range. Certification from OEM and individual equipment manufacturers are acceptable providing they are not part of a system(s) or altered.

## WARRANTY

The manufacturer shall include documentation of all warranties pertaining to the new ambulance. Each warranty shall be specifically detailed and shall describe what exactly is covered under the specified warranty. Warranties must be described and detailed in exact times (e.g years, months, days). Warranties offering “Lifetime” or “Limited Lifetime” are often considered legally vague and subject to interpretation from the manufacturer as well as the state in which the ambulance is placed in service. For this reason, the warranty for this ambulance shall be as follows:

- Module Structure: 10 Years / Unlimited Miles
- Paint: 5 Years non pro-rated / 180,000 Miles
- Electrical: 5 Years/ 180,000 Miles
- Materials and Workmanship: 5 Years/ 180,000 Miles
- OEM Materials: 2 Years / 75,000 Miles

A written statement of each of the manufacturer’s warranties shall be provided with this bid proposal.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## DOCUMENTATION

All documentation delivered with the ambulance shall be permitted to be in printed format, electronic format, audiovisual format, or any combination of these forms of media. The documentation shall be provided in a centralized manual, binder or CD. All documentation shall be clearly labeled and shall be easy for the purchaser to review as necessary.

The ambulance manufacturer shall deliver with the ambulance at least one copy of the following documents:

(as described in the forthcoming edition of NFPA 1917 Standard for Automotive Ambulances.)

(1) The manufacturer's record of ambulance construction details, including the following information:

(a) Owner's name and address

## DEMERS TYPE I MXP150

- (b) Ambulance manufacturer, model, and serial number
- (c) Chassis make, model, and VIN
- (d) GAWR of front and rear axles and GVWR
- (e) Front tire size and total rated capacity in pounds (kilograms)
- (f) Rear tire size and total rated capacity in pounds (kilograms)
- (g) Engine make, model, serial number, rated horsepower.
- (h) Type of fuel and fuel tank capacity
- (i) Electrical system voltage and alternator output in amps
- (j) Battery make, model, and capacity in cold cranking amps (CCA)
- (k) Chassis transmission make, model, and serial number
- (l) Ratios of all driving axles
- (m) Maximum governed road speed
- (n) Paint manufacturer and paint number(s)
- (o) Company name and signature of responsible company representative
- (p) Documents from a certified scale showing curb weight on the front axle and rear axle(s) (without personnel and equipment)
- (2) Certification of compliance of the optical warning system
- (3) Siren manufacturer's certification of the siren
- (4) Written load analysis and results of the electrical system performance tests
- (5) Certification of slip resistance of all exterior stepping, standing, and walking surfaces

### OPERATIONS AND SERVICE DOCUMENTATION

The manufacturer shall deliver with the ambulance at least one set of complete owner/operators manuals. These manuals shall also include after the sale service documentation covering the completed ambulance as delivered and accepted.

The owner/operators manual shall include the inspection, service, and operations of the ambulance and all major components thereof. The contractor shall also deliver with the ambulance the following documentation as set forth in the forthcoming edition of the NFPA 1917 Standard for Automotive Ambulances. The documentation listed here shall be for each ambulance delivered and shall contain the following information:

- (1) Manufacturer's name and address
- (2) Country of manufacture
- (3) Source for service and technical information
- (4) Parts replacement information
- (5) Descriptions, specifications, and ratings of the chassis

# DEMERS TYPE I MXP150

(6) Wiring diagrams for low voltage and line voltage ambulance-specific systems to include the following information:

- (a) Pictorial representations of circuit logic for all electrical components and wiring
  - (b) Circuit identification
  - (c) Connector pin identification
  - (d) Zone location of electrical components
  - (e) Safety interlocks
  - (f) Alternator–battery power distribution circuits
  - (g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- (7) Lubrication charts
- (8) Operating instructions for the chassis, any major components
- (9) Instructions regarding the frequency and procedure for recommended maintenance
- (10) Overall ambulance operating instructions
- (11) Safety considerations
- (12) Limitations of use
- (13) Inspection procedures
- (14) Recommended service procedures
- (15) Troubleshooting guide
- (16) Ambulance body, chassis, and other component manufacturer's warranties
- (17) Special data required by this standard
- (18) A material safety data sheet (MSDS) for any fluid that is specified for use on the ambulance.

## CERTIFICATION AND PAYLOAD SIGNAGE

The complete ambulance shall have a certification and payload label as shown . This label shall be mounted on the body (module) interior in a conspicuous location. The completed ambulance shall have a completed payload calculation form.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

# DEMERS TYPE I MXP150

## CHASSIS

The chassis shall be a 2011 Ford F450 4x4 with a 165" wheel base and a 13,300 lb. GVWR. This chassis shall include the following options from the chassis manufacturer.

## CHASSIS STYLE

Ford 350 4x4 chassis 165" wheelbase

16,500 lbs. GVWR

84" Cab to Axle

## PAINT

OEM Oxford White

## SEATING

40 /20 /40 cloth bench style seating

Interior Color Steel

## EQUIPMENT PACKAGE

643A Preferred equipment package XLT tram

47A Ambulance prep package

67A Dual alternators

## MIRRORS

Powered Telescoping trailer/tow mirrors

## RADIO

OEM AM/FM/ single disc CD Clock

## ENGINE

6.7 L V-8 diesel engine 300 HP / 600 lb.-ft. torque

# DEMERS TYPE I MXP150

## ALTERNATOR

Dual Alternators with a total of 357 amps.

## BATTERY

Two (2) 12V 750CCA/78 Amp- Hr.

## TRANSMISSION

Six speed automatic SelectShift® transmission with Tow/Haul Mode

## TIRES

LT225/70R19.5 blackwall steel wheel all season

LT225/70R19.5 spare tire/wheel

Jack

## WHEELS

19.5" Steel Wheels

## BRAKES

Four-Wheel Disc with Anti-Lock

## AXLE

4.30 ratio limited slip rear axle

## SPRINGS

Front coil 7000 lb.

Rear leaf 13,660 lb.

## STABILIZER BARS

Front and rear standard

# DEMERS TYPE I MXP150

## CARPET

OEM installed black rubber matting

## FOUR WHEEL DRIVE SHIFT

Electronic shift on-the-fly

## BLOCK HEATER

OEM Engine block heater

## EMISSIONS

50 state emissions certified

## FUEL TANK

40 Gallon

## ADDITIONAL OPTIONS/FEATURES

Adjustable gas/brake pedal

Daytime running lights

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## DIMENSION LABELING

The completed ambulance manufacturer shall provide a high-visibility label showing the dimensions of the ambulance and the GVWR of the competed vehicle. This label shall be located in a location easily found by the driver or attendant of the ambulance.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## HEADS UP CONSOLE

The completed ambulance shall include a Heads Up Console designed specifically for the chassis detailed above. This heads up console shall be integrated into the center dash panel area and shall include all controls and switches to operate all necessary emergency or mission critical functions. The heads up display shall incorporate LED backlit pictograms with switching and controls to operate and display the following items:

1. Primary/Secondary Emergency Lighting
2. Side Scene and Rear Load Lights
3. Alarm Cutoff for patient indicator and back up alarm
4. Wig Wag headlights (where applicable)
5. Individual lighting activation (lightbars, additional warning lights, etc.)
6. Rear Heat and AC controls with interior temperature display
7. Door Open Display
8. Compartment Open Display
9. Compartment Open Display
10. Digital Ammeter/Volt Meter Display
11. Auxiliary indicator Light

Exact switching and electrical features shall be detailed in the electrical portion of this specification. The detail above describes the minimum features the front heads up display shall activate.

Switch panels or displays requiring the operator to move their line of sight up or down is not permitted as this movement is not a natural line of sight movement for the driver and will take his or her focus off of the road.

An OEM radio shall be AM/FM stereo with CD and digital clock. The radio shall be moved to below the dash in the console in a pre-formed radio mounting bracket. The OEM radio shall be placed in this out of line of sight location as it not a necessary function of an emergency vehicle.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## FLOOR CONSOLE

A formed powder-coated aluminum floor mounted console shall be installed on the floor of the cab between the driver's and passenger's seats. This console shall include the OEM radio as well as cup holders.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

## DEMERS TYPE I MXP150

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

### COLD START PERFORMANCE REQUIREMENTS

The chassis engine shall cold soak tested to ensure the vehicle will start in harsh conditions. The chassis shall start and run for 5 minutes without stalling at -40°F (40-°C) without the use of external power or starting fluids and without the aid of engine block preheating devices (except glow plugs or combustion air pre-heater). This test shall meet and exceed shall the testing criteria in accordance with AMD 022, Cold Engine Start Test on a similar ambulance model.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

### AIR DUMP

The chassis shall be equipped with a rear air dump system capable of lowering the module to load the patient cot. When lowered, the cot loading height shall be no more than 33". The module shall automatically lower when the rear doors are opened. An override for the rear air dump shall be located in an easy to access location in the patient compartment and shall be clearly labeled as an override switch. A similar override switch with the same function shall be located in the cab. These switches shall be programmed into the vehicle's multiplexing electrical system.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

# DEMERS TYPE I MXP150

## HOURMETER

A digital or analog engine hourmeter shall be installed. This hourmeter shall be placed in a conspicuous location.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## HIGH IDLE DEVICE

A high idle or throttle to engine speed auxiliary control device (high idle switch or throttle) shall be installed to allow an increase in the engine speed when the ambulance is parked. The high idle shall be engaged when the ambulance when the parking brake is engaged or when the transmission is in park. The high idle shall deactivate when the vehicle is put into motion by means of a shift in the transmission.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## CAB RISER

An aerodynamically formed two-piece fiberglass cab riser engineered and designed specifically for the chassis shall be installed on the top of the chassis. A cab riser is preferred as it has been proven and documented to enhance fuel savings by reducing wind resistance on the front of the module box. The unique aerodynamic riser shall also act as a conspicuous accessory to the front of the ambulance to attract attention to oncoming motorists.

The fiberglass riser shall be attached using existing mounting holes in the OEM B-Pillar as well as a chemical bonding adhesion. The exterior fiberglass cab riser shall incorporate a return at the edges to provide additional strength to the cap. The interior formed fiberglass lighting module being bonded to the exterior cover piece to form one solid complete unit. The riser shall be in two (2) pieces with the space between the two (2) sections shall be filled with a foam core insulation.

This piece shall incorporate six (6) Whelen 400 series LED warning lights in red/clear/red pattern. Exact lighting specifications shall be detailed in the lighting section of this specification. Lights shall be recessed in the fiberglass cab riser and enclosed by a Lexan protective lens that is contoured to specifically fit the cab riser. Automotive window seal and adhesion shall be applied to Lexan covers for easy replacement and maintenance.

## DEMERS TYPE I MXP150

The interior of the riser section shall be insulated with anti-vibration foam as well as a dual bubble reflective insulation. Access points for the lights shall be installed in the ceiling of the cab and shall be easy to remove for maintenance.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### COAT HOOKS

(2) Two metal coat hooks shall be installed at the rear of the cab.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### READING LAMP

A red LED reading lamp shall be installed above the passenger to assist in night time vision. This light shall be installed in the cab headliner and shall be switched from the light head.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### FUEL FILL

A cast aluminum fuel fill shall be installed behind the rear wheel well on the driver side.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## DIESEL EMISSION FLUID FILL

When applicable, the diesel emission fluid (DEF) tank fill shall be located inside the G3 compartment. The fill shall be enclosed in aluminum diamond plate and clearly identified with a diesel emission fluid label.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## RUNNING BOARDS

Exterior steps or running boards shall be installed on the chassis. These running boards shall be attached with L brackets with integral gussets in three locations to secure the running board to the chassis in an underbody structure. The running boards shall be attached using the OEM holes. Formed aluminum diamond plate mud flaps shall be installed the front of the running board to prevent access debris. The running board shall be constructed of a sure grip material with machine punched holes to facilitate water and debris runoff.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## FRONT BUMPER

The chassis manufacturers OEM front bumper shall be furnished in the front of the chassis.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## REAR STEP BUMPER

A full width rear step bumper with integrated flip up rear stepping surface shall be installed on the rear of the vehicle. This rear bumper shall be bolted to the chassis from in no less than four locations at the top and sides of the chassis frame. The corner bumper ends shall be constructed of aluminum diamond plate and shall have machine cut round holes to facilitate debris and water runoff. A 9 in. center step shall have a "Sure Grip" open

## DEMERS TYPE I MXP150

grated surface with integrated holes to keep the rear flip up step free of debris. The flip down step shall rest of two L brackets with vibration dampeners installed.

The rear step shall be able to withstand a load of 500 lb. with no more than 1.0 in. of deflection no more than 0.25 in. of permanent deformation per the guidelines set forth in the AMD 018 Rear Step and Bumper Static Load Test Requirement as well as the forthcoming NFPA 1917 specification. Documentation of this test shall be provided with this proposal.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### CAB SEAL

The area between the cab and the patient compartment shall be a pass through opening. The exterior seal between the rear cab pass through window and the front of the module shall be sealed with a rubberized seal and attached securely to both points with mechanical fasteners as well as an adhesive bond. Proper mounting and reinforcements shall be placed in this area to ensure a solid weather and element resistant seal.

The seal shall be closed cell rubberized foam and shall remain flexible in extreme temperatures. A rubberized seal is the preferred seal due to its flexibility and ability and withstand the natural body and chassis torsion when the vehicle is in motion. The material shall be resistant to ozone, sunlight, oil

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### MODULE AND PATIENT COMPARTMENT

#### DIMENSIONS AND BODY CONFIGURATION

The overall dimensions of the completed ambulance module shall be 150" long by 95" wide. The interior headroom shall be at least 72" from the floor to the ceiling.

The ambulance overall payload shall be at least 3400lbs.

# DEMERS TYPE I MXP150

The ambulance module shall be of all aluminum construction. Detailed specifications of the compartment and door construction are located on the following pages of this section of the specification. Exact locations of the compartments detailed here can be found on the drawings accompanying this document. The compartment configuration of the completed ambulance is as follows:

## DRIVERS SIDE CONFIGURATION:

### **G1 Compartment**

This lower portion compartment shall be located on the driver's side front of the module directly behind the cab. This compartment shall be used for the storage of the oxygen cylinders

### **G2 Compartment**

This compartment shall be a large full depth storage compartment located behind of the oxygen compartment. The upper portion of this compartment shall be individually sealed and heated. The compartment shall contain all electrical components and the electrical panel including multiplexing system's Electronic Controller Units. The lower portion of this compartment shall be used for general storage

### **G4 Compartment**

This compartment shall be located at the rear of the driver side behind the fuel fill this compartment shall house the spare tire. This compartment shall be designed for general storage with inside and outside access to the patient compartment.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## CURBSIDE CONFIGURATION:

### **D1 Compartment**

# DEMERS TYPE I MXP150

This compartment shall be located on the curbside front of the module this compartment shall access the ALS compartment as well as battery storage beneath the ALS compartment.

## **D2 Compartment**

A side entry door shall be located just behind the D1 compartment. This door shall allow for entering and exiting the module patient compartment.

## **D4 Compartment**

This compartment shall be located at the rear curbside of the vehicle. This compartment shall contain to dividers for backboard or spine board storage.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## REAR CONFIGURATION:

### **A1 and A2 compartment**

This is the rear entry door for patient loading. Each door shall have fixed automotive style windows as specified in the windows section of this specification.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## PASS THROUGH

The ambulance shall be equipped with a bulkhead wall partition. This shall be placed between the driver and patient's compartment. The partition shall be located directly behind the driver and cab passenger seats when in the rearmost position. The pass through partition wall shall be constructed of aluminum and shall extend from the floor to the ceiling. A sliding window shall be installed to separate the cab and patient compartment. The window shall be centered between the driver and passenger seats. The window shall be at least 150 in<sup>2</sup>. Fixed or hinged windows in this area will not be accepted in this location.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## EXTERIOR CONSTRUCTION

### OVERALL CONSTRUCTION

This Type I ambulance body specified here shall be able to withstand a force equal to 2.5 times the curb weight of the vehicle applied to either the driver or passenger side of the vehicle's body structure. This ambulance body style shall be test and approved in accordance with AMD 001, Ambulance Body Structure Static Load Test. Testing documentation shall be provided by the bidder at the request of the purchaser.

The entire modular body shall be engineered to provide the highest possible structural integrity while maintaining the lowest possible overall weight. This method of engineered construction shall provide an efficient ambulance design with greater usable payload, improved ride characteristics and greater maintenance intervals on brakes and suspension components.

The completed ambulance shall have no water leakage into the cab, compartment, patient compartment, or through any door seal, light seal, or cab-to-module seal. Compliance of the body sealing out water shall be validated by testing a substantially similar ambulance in accordance with AMD 010, Water Spray Test.

All welding performed on the fabricated ambulance shall be completed by a welder certified in their particular welding discipline. Manufacturers providing only certification of department supervisors or final inspectors shall not be acceptable and shall be cause for rejection. Certified welders are desired by the purchaser as this proves the welder has met the requirements to perform the task at a high level of quality and consistency. The manufacturer shall provide proof of the welder's certification upon the purchaser's request.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### BODY MOUNTING

The module body shall be installed using the OEM insulated rubber puck mounts securely bolted from the bottom to allow for ease of removal should the vehicle be remounted. The module body shall be mounted in 10 locations, five (5) on each side of the chassis frame rails. OEM supplied automotive style rubber puck mounts shall be bolted through ½" 6061 T6 aluminum structure plates to serve as reinforcement points of the bottom of the module as well as provide a solid single surface piece to absorb the natural torsion as the vehicle is in motion ("body roll").

## DEMERS TYPE I MXP150

An additional steel "L" bracket shall be added to the rear chassis frame rail to evenly distribute the weight of the module across the rear section. This L bracket shall serve as another mounting point for the module and under body components.

The body shall be mounted in such a manner as to allow the lowest possible load height. The body shall not rest on top of the chassis frame mounts, but shall be attached in such a manner as to "nest" between the frame rails. This method shall provide a lower load height as well as a superior ride.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### ROOF CONSTRUCTION

The ambulance roof shall be of aluminum construction utilizing a customized formed roof extrusion and a single piece roof. The formed roof extrusion shall be constructed to integrate and accept the side wall tubes, side wall skin, roof skin and the roof tube structure. A drip rail shall also be integrated into this one piece formed extrusion. All tubes and side wall skins shall be welded into place at the roof extrusion to allow proper seal. This method shall allow the roof and side structure to be square when the module is assembled.

The roof tube structure shall be 1.5" x 2" .08 tubes constructed of 6061-T6 aluminum. The radius formed tube structure shall incorporate a .060 thickness on the longitudinal side and a .080 thickness on the lateral side. The roof structural tubes shall run the full width of the module roof with no seams or breaks in the tubes.

5052-H32 C-channel formed mounting plates shall be installed in each area where additional equipment will be installed. The c-channel shall be welded to the roof tube structure in those areas. The safety net reinforcement structure utilize the c-channel, and shall have a 3/8" 6061 T6 mounting plate inside the C-channel to provide the necessary strength to withstand the forces needed to keep the safety net secure.

The single sheet .090 5052-H34 roof shall be installed on the integral lip on the roof extrusion to allow the roof sheet to sit flush with the corner roof extrusion. The roof skin shall be attached to the tube structure in the roof using a chemical bonding agent. All roof skins shall be cleaned and properly prepared to accept this bonding agent. The edges of the roof skin shall be welded at the corner roof extrusion at the junction point. The edges shall have a continuous weld down the entire length and width of the extrusions and then be ground to form a single smooth paintable surface.

The module corner extrusions and the roof extrusions shall be constructed in a manner to properly attach without needing additional corner caps or filler pieces. Additional corner pieces create a point of failure and allow the module to not be properly aligned and square. In addition, some corner caps could compromise the structural

## DEMERS TYPE I MXP150

integrity of the roof and corner construction. Manufacturers utilizing corner caps shall photograph and describe in detail their proposed construction method in the exceptions section of this bid proposal.

The purchaser will not accept an untested prototypical build for the sole intent to comply with this requirement of the specification.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### SIDE BODY CONSTRUCTION

The side of the ambulance body shall be constructed of 1.5" x 2" .08 tubes constructed of 6061-T6 aluminum. The radius formed tube structure shall incorporate a .060 thickness on the longitudinal side and a .080 thickness on the lateral side. A radius tube is preferred due to its superior durability when attached to the side skin. Side tubes shall be placed at a minimum of 16" on center.

All side wall tubes shall be chemically bonded to a one piece CNC machine cut side wall made of .090 5052-H32 aluminum. The side wall shall be inserted into the manufacturers roof extrusion lip designed for the side wall and welded on the back side of the wall at the base of lip. The side tube extrusions shall also fit into a channel in the bottom of the corner roof extrusion to ensure the module is square on both sides. The tubes shall be welded into place when attached to the bottom roof extrusion channel.

Side wall tubes shall be welded just below the backside of the drip rail at the connection points, the remainder of the side wall shall be chemically adhered with an industrial strength bonding agent only. The side wall surface shall be properly prepped and cleaned to accept this adhesive. This attachment method is preferred as it creates a side wall surface with no warpage as no heat displacement takes place as it would when the side wall is attached via common heat welding.

In areas where seating is going to be installed, the side wall shall have a ½" 6061-T6 mounting rail installed. This rail shall serve as a proper seat belt mounting point as well as an additional reinforcement in the event of a side impact.

Alternative side wall construction methods not complying with the above detailed specifications can be presented and shall be detailed in the exceptions section of this bid proposal. Photographs and a detailed documentation of the process shall be included in the bid specification should an alternative method be used. The purchaser will not accept prototype built models or untested construction methods used only to satisfy the detailed description of this specification.

# DEMERS TYPE I MXP150

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## EXTERIOR COMPONENTS

### WHEEL WELLS AND FENDERETTES

An aluminum wheel well shall be incorporated into the under body structure. This wheel well shall be sealed from both sides to prevent water or debris from entering the module. The interior of the wheelwell shall be insulated on all sides with a self-adhesive low density closed cell foam to prevent noise caused from vibration and exterior road noise.

Formed fiberglass fenderettes shall be installed on the module body to prevent excess splash on the modular body. The fenderettes attached in (5) locations. The bottom locations shall be screwed into L brackets while the 3 top mounting surfaces shall allow for the fenderette to be connected into position. This method allows for universal replacement and ease of maintenance in this high impact area.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### FRONT AND REAR CORNER GUARDS

Front and rear corner guards constructed of smooth aluminum shall be attached to the bottom of the corner extrusions and shall extend 30" from the bottom of the module. This corner guards shall serve as additional protection against stones and small debris.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## FRONT MODULE PROTECTOR

A front module protector shall be installed to serve as additional protection against stones and other small debris. The protector plate shall be made of smooth aluminum and shall be installed on each side of the front face of the module extending from the chassis to the corner extrusions.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## REAR KICK PANEL

A full length rear aluminum diamond plate kick panel shall be installed below the rear doors and above the rear bumper. The kick panel shall serve as additional protection in this high wear area of the vehicle. This rear kick panel shall not be integral to the structural integrity of the module.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## EXTERIOR COMPONENT INSTALLATION

Holes and cutout for lights and other components attached to the side of the ambulance shall be CNC and punched at the time of the module fabrication. Pre-cut holes and cutouts shall be painted to allow for complete coverage. When installation hardware is of dissimilar metals, an anti-corrosive electrolysis inhibitor spray in addition to a plastic well nut insert shall be installed to ensure no contact is made between the module body and hardware fastener.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## PATIENT COMPARTMENT SIDE AND REAR ENTRY DOORS

## PATIENT COMPARTMENT SIDE AND REAR ENTRY DOORS

Each compartment door shall be constructed from an extrusion that mates to the door jamb structure. Cut outs for the latches and hinges shall be machine cut and not manually hand cut or drilled out to ensure a consistent fit and attachment of the door. The door extrusions shall be welded securely at the mitered edges and each bracing point shall be welded to the inside of the custom formed extrusion. The extrusion shall be designed such that the weather seal is placed ahead of the door latch to assist in keeping debris from getting into the latch. When closed, the door shall form a complete weather tight seal. A second formed rubber weather seal shall be installed on the door frame ensuring a durable weather seal for each compartment.

The exterior door panel skin shall be constructed of one piece .090 formed aluminum. The aluminum shall be engineered to wrap around the form door extrusion to create a complete aesthetically pleasing appearance without exposed seams.

Exterior door panels shall be adhered to the extruded door structure with a chemical bonding adhesive. The completed exterior door shall be engineered to fit properly and square into the doorjamb extrusion. Each door component (including the exterior door skin, the door extrusion, and door jambs) shall be labeled by the manufacturer's build number for ease of replacement.

Doors hinges shall be attached to the extrusion and through the structural tube attached to the door extrusion. The door hinges shall be rust resistant piano hinges securely screwed to the door jamb extrusion. Each door shall be equipped with a 60 lb. gas strut hold open to ensure a solid closure. The strut shall be mounted to "L" shaped brackets over fastened to the chassis door jamb extrusion and on the compartment door extrusion. Spring type hold opens are not desired due to their tendency to wear and break over time.

Interior door panels shall be constructed of a single sheet preformed .090 powder coated aluminum. Holes for the door panel mounting shall be CNC cut to ensure a proper fit. The interior door panel shall reside in a small recess in the formed exterior door extrusion to give the door panel a flush fit. Access points shall be included on the door panel to allow for easy maintenance of the latching or door opening mechanism. A low density open cell foam tape shall be installed on the door structure as a dampening insulator from any vibration that may occur. This tape shall be dual sided but shall not be the primary means of the inner door panel attachment to the structure.

## DEMERS TYPE I MXP150

All door handle hardware shall be flush fit on the exterior and the interior. Door handles shall meet the performance requirements of FMVSS 206. Door handles shall be automotive style and shall not protrude from the paddle latch when the door is in the open position when the handle is released.

All Door handles shall be designed and installed to protect against accidental or inadvertent opening.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### SIDE ENTRY DOOR WINDOW (SAFETY VISION)

A window shall be installed in the side entry door . This window shall be automotive quality and shall have no exposed extruded trim rings on the outside. The window shall be installed flush to the door and adhered with automotive adhesive in its recessed window housing. Window designs with an extruded or exposed trim ring are not desired due to the inconsistent sealing method and difficult replacement of the window and trim ring. The window glass shall be tempered automotive quality with a dark tint.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### REAR ENTRY DOOR WINDOWS (SAFETY VISION)

A window shall be installed in the rear entry doors. This window shall be automotive quality and shall have no exposed extruded trim rings on the outside. The window shall be installed flush to the door and adhered with automotive adhesive in its recessed window housing. Window designs with an extruded or exposed trim ring are not desired due to the inconsistent sealing method and difficult replacement of the window and trim ring. The window glass shall be tempered automotive quality with a dark tint.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## REAR DOOR LOAD HEIGHT

The rear entry doors shall allow for a maximum load height of 31” with the assistance of a rear air dump system. The module shall be constructed to evenly set of the chassis frame rails to produce this load height requirement. This shall also lower the vehicle’s center of gravity and allow for a smoother ride.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## EMERGENCY RELEASE LATCH

The rear entry door shall incorporate an emergency release latch at the top and the bottom of the primary rear entry door. This emergency latch shall be attached directly to the door latches to manually release the latch to an open position in the event the paddle handle becomes inoperative.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## ACCESS HANDRAILS

Rounded 1.25” chrome handrails shall be installed at the side and rear entry door to allow ease of entry into the patient compartment. The chrome hand rails shall be 90 degree (L – shaped) to provide more than one handling surface. These handles shall be designed to give the persons exiting and entering the patient compartment three points of contact to maintain safe entry and exit of the vehicle.. The access handrails shall be installed on the interior door panel into mounting plates in the door extrusions. Hand rails attached through the door panel only are not preferred as they have a tendency to pull loose after an extended period of pulling the attendant up into the vehicle.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## HANDRAIL TESTING

The handrail specified here shall withstand a force of 300 lb. (136 kg) applied in any direction without detaching, loosening, or permanently deforming. Compliance of the handrail shall be validated by testing a substantially similar ambulance or body structure in accordance with AMD 008, Patient Compartment Grab Rail Static Load Test.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## SIDE ENTRY DOOR STEP

A non-skid stepping surface shall be built into in the side entry door step well. This stepping surface shall be constructed of aluminum diamond plate and shall cover of the entire step well area. The step well shall be illuminated with an LED light. The step well light shall automatically activate when the side entry door is open.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## EXTERIOR COMPARTMENTS

### EXTERIOR STORAGE

The completed ambulance shall have adequate storage for equipment used to provide patient care. All exterior storage compartments shall be constructed of an extruded door frame structure and shall align flush with the side wall tubes and welded to the back of the door structure. The front of the extruded door shall not have any signs of welding as this causes distortion to the door and requires the use of bondo or body filler to create the illusion of a smooth surface. This door frame shall be CNC machine cut for the installation of the nader pin to ensure consistent fit and placement. Holes for the door hinges shall be CNC punched into the jamb for exact fit when the door is installed. Extruded door jambs shall be sealed against the side wall skin. The extrusion shall be treated and adhered to the side skin to ensure debris and weather does not penetrate the extrusion area. This method is preferred as the extrusion attachments allow for an amount of necessary flex and torsion when the ambulance is in motion. This CNC machined method allows for the easy ordering and replacement of the door should it become damaged during the life of the ambulance.

## DEMERS TYPE I MXP150

The sides and the ceiling of the interior storage compartment shall be constructed of a minimum .060 machine formed aluminum diamond plate. The sides, top and bottom of interior compartment shall be formed and welded to ensure a secure, square fit. All outside edges of the compartment shall be sealed with weather proof sealer/inhibitor. The compartments shall be properly anchored and reinforced to the door jamb extrusions and the floor structure. The bottom of each compartment shall be constructed of smooth 6061 T6 aluminum and shall have a CNC machine punched drain hole to facilitate water drainage and provide ventilation.

Ventilation shall be provided in the sides and on the top of the compartment to allow for adequate air movement when the door is closed. The upper portion of the compartment shall be machine louvered to ensure an even distribution of air escaping the compartment. This even distribution of air movement shall allow the door to close with minimal external force and shall allow it to seal properly against the door jamb extrusion. Escaped air shall push into the interior of the module in the natural insulated dead air space between the side wall and the cabinetry.

Exact exterior compartment sizes and dimensions shall conform to the drawings provided with this bid proposal and shall conform to the layout detailed at the beginning of this section.

The purchaser will not accept prototype built models or untested construction methods used only to satisfy the detailed description of this specification. Alternative construction methods shall be detailed in the exceptions section of this bid proposal. Photographs of this construction method shall be provided to allow for adequate comparison.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### EXTERIOR COMPARTMENT SHELVES

Adjustable shelves shall be installed in compartments listed above. All exterior compartment adjustable shelves shall be made of machine formed and break-formed .090 aluminum diamond plate. Each adjustable shelf shall include a 3/4" lip on each side of the shelf. The shelf shall be attached to a U channel unistrut track on at least two sides of the compartment to allow for universal adjustability as the purchaser deems necessary.

The shelf shall be trimmed with a trim lock material to cover any exposed edges and the top of the lip. A safety yellow removable floor tile shall be installed on each cabinet to allow for added grip on the shelf and easy removal for cleaning.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## COMPARTMENT DOORS

Each compartment door shall be constructed from an extrusion that mates to the door jamb structure. Cut outs for the latches and hinges shall be machine cut and not manually hand cut or drilled out to ensure a consistent fit and attachment of the door. The door extrusions shall be welded securely at the mitered edges and each bracing point shall be welded to the inside of the custom formed extrusion. The extrusion shall be designed such that the weather seal is placed ahead of the door latch to assist in keeping debris from getting into the latch. When closed, the door shall form a complete weather tight seal. A second formed rubber weather seal shall be installed on the door frame ensuring a durable weather seal for each compartment.

The exterior door panel skin shall be constructed of one piece .090 formed aluminum. The aluminum shall be engineered to wrap around the form door extrusion to create a complete aesthetically pleasing appearance without exposed seams.

Exterior door panels shall be adhered to the extruded door structure with a chemical bonding adhesive. The completed exterior door shall be engineered to fit properly and square into the doorjamb extrusion. Each door component (including the exterior door skin, the door extrusion, and door jambs) shall be labeled by the manufacturer's build number for ease of replacement.

Doors hinges shall be attached to the extrusion and through the structural tube attached to the door extrusion. The door hinges shall be rust resistant piano hinges securely screwed to the door jamb extrusion. Each door shall be equipped with a 60lb gas strut hold open to ensure a solid closure. The strut shall be mounted to "L" shaped brackets over fastened to the chassis door jamb extrusion and on the compartment door extrusion. Spring type hold opens are not desired due to their tendency to wear and break over time.

Interior door latching hardware shall consist of solid rods and connectors attached directly to the door latch and paddle latch mechanisms. The use of cables to operate any latching mechanism shall not be permitted by the purchaser.

Interior door panels shall be constructed of a single sheet preformed .090 powder coated aluminum. Holes for the door panel mounting shall be CNC cut to ensure a proper fit. The interior door panel shall reside in a small recess in the formed exterior door extrusion to give the door panel a flush fit. Access points shall be included on the door panel to allow for easy maintenance of the latching or door opening mechanism. A low density open cell foam tape shall be installed on the door structure as a dampening insulator from any vibration that may occur. This tape shall be dual sided but shall not be the primary means of the inner door panel attachment to the structure.

All exterior patient compartment entry doors and exterior compartment doors shall be keyed alike.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

# DEMERS TYPE I MXP150

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

## PATIENT COMPARTMENT INTERIOR

### FLOOR

The sub floor of the modular body patient compartment shall be designed to prevent water penetration. The subfloor shall be welded to the bottom of the module body exterior. The aluminum subfloor shall be a machine press cut one-piece floor constructed of 5052-H32 aluminum. A minimum .053 heat shield shall be installed under the subfloor and under body structure to serve as additional protection against the external heat generated under the patient compartment.

The floor shall be constructed of ¾" marine grade 7-Ply plywood and shall extend the length and width of the patient compartment. Where additional sections of plywood are needed, the sections shall utilize lap joint construction each other to maintain a continuous lay of the floor and eliminate the possibility of gaps or cracking in the wood. The sub floor shall be installed before the installation of any cabinetry, creating one solid floor. Floors cut to fit in the patient compartments aisle space will not be accepted. Holes in the floor for patient handling options and seating shall be precut in the sub assembly stage to allow the flooring to be placed over top of the holes and create virtually no means of liquids to permeate the sub floor when the patient compartment flooring components are installed (e.g. cot mounts, attendant seat). The floor assembly shall be able to accept a payload of no less than 800lbs. Results of this payload test shall be provided with the proposal. All sub floor assemblies shall meet or exceed the concentrated static load test procedure in ASTM E661.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

# DEMERS TYPE I MXP150

## FLOOR COVERING

Altro Safety floorings shall be installed in the completed ambulance. The non-slip floor covering shall be rolled at least 3" up the sides of the patient compartment. This floor shall be rolled on the coved floor extrusion and shall be adhered at every point of the floor cove giving a tight secure fit that will not bubble and prematurely tear. The floor shall be a one-piece (seamless) floor and shall be able to be cleaned without having to purchase special or potentially harmful cleaning agents. This roll up floor shall cover the entire length and width of the compartment's working area. Areas in the floor where the sidewalls and floor meet shall be sealed to prevent any blood borne pathogens from entering. Corrosion resistant cove molding or the covering shall extend at least 3 in. (76 mm) up the sidewalls. Floors with screwed on cove molding above the floor is not desired by this department.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## INSULATION

The patient compartment shall be insulated with a vermin and mildew proof reflective faced insulation with a hard compressed fiberglass back. This insulation shall be used in all areas of the module including the sidewalls, floor and roof. Reflective faced compressed fiberglass insulation is recommended due to its nature not to settle over time and the ability to block outside noise. Natural air space between the cabinet assembly as and the side wall shall also act as a natural insulation barrier. This method of insulating the module is the preferred method of this agency. Other insulating methods may be documented and submitted. In accordance to the KKK-A-1822 Federal Ambulance Specifications and the forthcoming edition of NPFA 1917 Standard for Automotive Ambulance requirements, all insulations shall be non-settling type, vermin-proof, mildew-proof, fire retardant, non-toxic, and non-hygroscopic.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## INTERIOR STORAGE

The interior street side cabinetry shall provide a minimum volume of 30 cubic feet of enclosed cabinet, compartment, or shelf space. All cabinet structure, cabinet doors, shelves and openings described here shall be constructed of manufactured inert material. Over time, wood products tend to warp, distort and shrink creating potential for premature structural wear in the cabinetry. The purchaser prefers fiberglass and aluminum construction for its resiliency to harsh environments and cleaners as well as its lightweight size and overall strength.

The overall cabinet structure shall consist of interlocking extrusions. Extruded frame work shall provide the structural integrity of the cabinets as well as creating the individual cabinet sections. These extrusions shall be custom fit and CNC cut to form the particular cabinet configuration. All Cabinet extrusions shall incorporate a rounded edge to give an aesthetically pleasing appearance as well as providing a smooth, safe surface for the crew member. Mitered box framed cabinetry will not be accepted as a mitered corner produces sharp edges and potential gaps at the corners. Each interlocking extrusion shall be attached by a hex machine bolt into the extrusion via a tap and die hole. Two (2) hex bolts shall interlock each cabinet extrusion. These fasteners shall lock the cabinet frame structure into place and shall prevent the cabinet from twisting or torqueing. Cabinet inserts shall be placed on the lip of the extrusion and shall be adhered with a Sikaflex adhesive as well as mechanically fastened into position. This structure allows for the structure to support the weight and pull of the cabinets. The structural integrity of the cabinetry is not reliant on the interior storage cavity.

The cabinets shall be attached at the top of the roll up floor extrusion and an aluminum 3/8" L bracket at the ceiling. The ceiling L bracket shall be fastened to the 1.5" x 2" structural tubing. This structure shall create a longitudinal anchoring surface for the cabinets. When attached the cabinet structures shall be secured firm into position at the top and bottom yet still allows for some torsion while the vehicle is in motion.

Unless specified for a particular purpose, all interior cabinets shall be constructed of preformed fiberglass inserts. Cabinets designed for a particular purpose may be constructed of formed aluminum depending on the application. All cabinets shall be equipped to accept removable adjustable shelves.

All cabinets shall be easy to clean, impervious to soap, water, body fluids, and disinfectants, shall be mildew resistant. The interior cabinet surface shall comply with the requirements in FMVSS 302 as well as the forthcoming NFPA 1917 Standard for Automotive Ambulances and the KKK-A-1822 Federal Ambulance Specifications

Cabinets with sliding windows shall have a transparent window and window track felt installed in the dedicated channels of the cabinet extrusion. The cabinet windows shall be made of 3/8" Lexan and shall incorporate a full length plastic handle. Aluminum pull handles are not desired due to the tendency to produce sharp edges on the top and bottom of the handle.

## DEMERS TYPE I MXP150

To ensure the cabinet structure will withstand considerable impact without collapsing, the cabinet structure shall be pull tested to 9000 lbs. from the side and 10,000 lbs. from front to rear. Other cabinet construction methods will be considered provided documented and photographic evidence is supplied that the cabinets were pull tested to the weight detailed above. This accurate and approved testing documentation shall be provided when proposing an alternate cabinet structure.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### STREETSIDE CABINetry

The streetside cabinetry layout shall consist of the following cabinetry:

A large storage cabinet shall be located above the action area and shall continue from the bulkhead cabinetry to the CPR seat. This cabinetry shall be accessible via sliding windows that shall also flip-up with restocking hinges for ease of restocking.

A narrow partial depth cabinet shall be located above the CPR seat and shall conform to the 43" minimum headspace for occupant seating. This cabinet shall be accessible via sliding windows.

A large full depth storage cabinet shall be in the upper section of the rear streetside. This cabinet shall extend from the CPR seat to rear doors. This cabinetry shall be accessible via sliding windows that shall also flip up with top hinges for ease of restocking.

A smaller full depth cabinet shall be installed under the full depth upper rear streetside cabinet. The cabinets shall be adjacent to the cardiac monitor area in and shall be accessible via sliding windows.

A cardiac monitor countertop shall be installed aft of the CPR seat. The cardiac monitor countertop shall be constructed of a one piece solid surface material in the same manner as the action area.

The exact cabinetry layout shall match the drawings specified in this bid proposal.

The purchaser will not accept prototype built models or untested construction methods used only to satisfy the detailed description of this specification. Alternative construction methods shall be detailed in the exceptions section of this bid proposal. Photographs of this construction method shall be provided to allow for adequate comparison.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

# DEMERS TYPE I MXP150

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

## ALS CABINET

The right side front bulkhead ALS cabinet shall be constructed of a single sheet CNC machine formed smooth aluminum and attached securely to the front bulkhead partition tube structure. The ALS cabinet shall have a scratch resistant powder coated finish. Access to the ALS cabinet shall be either from the interior or the exterior of the vehicle.

The ALS cabinet shall be divided into (2) two sections. The upper section shall be accessed via two formed aluminum access door with Lexan inserts. The doors shall be operated by two thumb style trigger latches to access each side. Two magnetic latching mechanisms shall be installed at the bottom of the door to ensure a secure closure when the vehicle is in motion. This section of the ALS cabinet shall have (1) one adjustable shelf.

The lower section of the ALS cabinet shall be access via two formed aluminum doors with Lexan inserts. The doors shall be operated by two thumb style trigger latches to access each side of the top of the door. Two magnetic latching mechanisms shall be installed at the bottom of the door to ensure a secure closure when the vehicle is in motion. This section of the ALS cabinet shall have (1) one adjustable shelf.

All adjustable shelves shall be installed on unistrut U-Channel tracking to allow for maximum adjustability. The adjustable shelves shall be CNC cut and formed .090 aluminum and powder coated to match the ALS cabinet. The shelves shall also have a 3/4" lip as an additional safety precaution. The bottom of the shelves shall be lined with a yellow raised plastic tile like the exterior compartment shelves. This tile shall set in the compartment and shall be easily removable.

The purchaser will not accept prototype built models or untested construction methods used only to satisfy the detailed description of this specification. Alternative construction methods shall be detailed in the exceptions section of this bid proposal. Photographs of this construction method shall be provided to allow for adequate comparison.

ALS cabinet layout and dimensions shall match the drawings included in this bid proposal.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

# DEMERS TYPE I MXP150

## BULKHEAD CABINETS

The front bulkhead cabinets shall be constructed of one-piece formed .090 powder coated smooth aluminum with CNC cut holes for hinges and proper door placement. The cabinet doors shall also be CNC formed aluminum door with a center Lexan window. These cabinets shall be attached to the bulkhead wall tube structure to ensure a square and secure fit.

A center bulkhead cabinet shall be installed. This one-piece powder coated aluminum cabinet shall be securely fastened to the bulkhead tube structure similar to the other bulkhead cabinets. This cabinet shall be constructed with interlocking extrusions and shall be accessible via a locking thumb style trigger latch. This cabinet shall be keyed the same as the locking cabinet on the streetside locking drug cabinet.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## DRAWERS

Drawers shall be constructed of formed powder coated .063 smooth aluminum. These drawers shall be uniform in size and shall be specifically identified by the manufacturer for ease of replacement should the need arise. The drawer slides shall have a self-locking stop integral to the slide to prevent the drawer from opening past a safe designated point. All drawer faces shall be constructed in an overlapping style to ensure a consistent tight fit over the drawer opening. Handles for the drawer shall be machine cut to ensure proper fit and the drawer pulls shall be low profile flush mount with a thumb latch opening.

Drawer dimensions and locations shall match the drawings included in this bid proposal.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## RESTOCKING CABINETS

Flip up style restocking cabinets shall be installed on all of the streetside cabinets. Restocking cabinet faces shall be constructed of the same interlocking cabinet extrusion material as all other cabinets specified here. A piano style hinge shall be securely fastened to the top of the cabinet structure to allow the cabinet's face to lift when the small thumb latch is released. A gas strut shall be installed on the side of the cabinet to lift the cabinet's face when

## DEMERS TYPE I MXP150

it latch is released. The bottom lip of the front cabinet cavity shall be rubber coated as an additional protective surface. The cabinet shall comply with the same testing criteria as other cabinets in this specification.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### INTERIOR SURFACES

The interior of the ambulance shall be constructed in such a way that is free of sharp edges and can be easily cleaned and maintained. Wall surfaces shall be a CNC cut non-wood, resin-based material designed to specifically match the interior design of the module. A CNC cut surface is preferred due to the ease of maintaining sealing and long term cleaning as excess trim pieces and “filled in” rough cut installation holes are not present. All interior surfaces shall be easy to clean, impervious to soap, water, body fluids, and disinfectants, shall be mildew resistant. Interior surfaces shall comply with the requirements in FMVSS 302 as well as the forthcoming NFPA 1917 Ambulance standards and the KKK-A1822 Federal Ambulance Specifications. The interior color shall be light neutral color to reflect as much light as possible.

Trim pieces adjoining multiple wall surfaces are not preferred by the purchaser as this adds another crevice to keep clean and could become an unnecessary source of penetration for debris or liquids to enter. Trim molding can also contain sharp edges on the corners and could be a potential hazard.

All components installed in the ceiling or shall be mounted as flush as possible and shall not protrude any further than 1” from the ceiling. Components surface mounted on the wall shall comply with the head protection requirement and shall incorporate a protective shield or covering.

The action area countertop shall be made of aircraft grade fiberglass and extend up the back wall of the action area to form one solid surface. The countertop shall be one piece and incorporate a ½” lip to contain any liquid spillage.

All upholstered seating surfaces shall be thermoformed and shall have no exposed stitching. Head pads and vinyl trim areas which are not seating areas shall be customized with vinyl wrapped polyurethane foam with a hard surface backing material.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## SEATED HEAD CLEARANCE

The top surface of the bottom seat cushion to the nearest overhead obstruction for each designated seating position shall be a minimum of 43". This requirement is in accordance with AMD 025, Measurement Guidelines: Occupant Head Clearance Zones. No exceptions shall be taken to this requirement.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## ATTENDANT'S SEAT

An automotive style thermoformed seamless attendant's seat shall be installed at the head of the cot in the patient compartment. The attendant's seat shall have a three-point seat belt integrated into the seat. The seat shall swivel and lock position and shall also have front to back travel. This seat shall conform and comply with the FMVSS Motor Vehicle Safety Standards, the forthcoming edition of the NFPA 1917 Standard for Automotive Ambulances as well as the current revision of the KKK-A-1822 Federal Ambulance Specification.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## CPR SEAT

A bench style CPR seat shall be located on the streetside wall. This seat shall be positioned at the torso of the cot when the attendant is in the seat. The CPR seat shall be at least 24" wide and incorporate a thermoformed bottom seat as well as two evenly spaced back rests also of thermoformed vinyl. A two point lap style seatbelt shall be attached to the streetside 1/2" aluminum side rail structure to adequately secure the seatbelts.

Bench style CPR seat belts shall be pull tested to 5000 lbs. to comply to the necessary pull testing requirements set forth in the KKK-A-1822 Federal Ambulance Specifications. Documentation of the test results shall be provided by the bidder.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## SQUAD BENCH

A squad bench capable of seating three (3) attendants shall be located on the curbside of the vehicle. To maintain structural integrity, the squad bench base shall be a one piece construction with formed rolled edges to provide additional strength in this seating position. The squad bench base material shall be constructed of an engineered CNC machine formed .090 aluminum with CNC holes precut to accommodate the seat belts, latching mechanisms, mounting hardware and a kick out sharps and waste container. A preformed squad bench is preferred by the purchaser as this design has been tested and provides a uniformed look. This engineered pre formed aluminum squad bench shall also be easy to replace should the bench become substantially damaged. The squad bench shall be attached to the side wall structure as well as the roll up floor extrusion to lock the bench into a secure position.

Access to the storage area under the squad bench shall be via a positive closing latching system on the squad bench lid and face. The cutout for this latch shall be CNC cut and the lid shall be held down with a door pin style catch. When the latch is released, the bench shall automatically raise open via the compressed gas struts attached to squad bench lid and bottom of the squad bench storage area. The one-piece flooring material shall cover the bottom of the squad bench storage area.

(3) sets of seatbelts shall be located on the back of the squad bench permanently bolted through the ½” side rail structure. Holes to accommodate the seatbelts shall be pre drilled prior to mounting to avoid any potential errors during the installation process. An additional (3) female seat belt buckle shall be bolted to the side of the squad bench in pre-engineered CNC cut holes. These seat belts shall be evenly spaced and shall be used to restrain a back board or a spine board on the bench to act as a secondary litter.

The squad bench seating area shall be pull tested to 5000lbs to comply to the necessary pull testing requirements set forth in the KKK-A-1822 Federal Ambulance Specification.

Individual seamless thermoformed cushions shall be placed at the back of each seating position. These backrests shall be contoured for comfort. The color of these backrests shall match the interior vinyl cushions.

The purchaser will not accept prototype built models or untested construction methods used only to satisfy the detailed description of this specification. Alternative construction methods shall be detailed in the exceptions section of this bid proposal. Photographs of this construction method shall be provided to allow for adequate comparison.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## HVAC

The patient compartment HVAC units shall be controlled by the driver or the patient compartment crew member via the multiplex switch panels located on the front dash or the rear switch panel.

The HVAC system shall be controlled by a thermostat incorporated in the multiplexing electrical system. In order to achieve maximum efficiency and optimization in this system, the HVAC systems shall be controlled via Pulse Width Modulation (PWM) to allow the heating and cooling system to run at its most effective level and to allow the customer to adjust the level of blower settings if desired. The PWM system shall also allow for the HVAC system to engage more efficiently, producing minimal to no initial electrical spike to the electrical system.

Adequate room for hose connections and hoses shall be made when installing this HVAC unit. The hoses shall run along the sides of the module to their specified locations based heating and cooling requirements.

All of the hoses connecting the heating and cooling devices shall be clamped with metal clamps at least every 18 inches and shall not have bends in the hoses greater than 45 degrees to maximize airflow.

## HEATING

The Heating unit shall be installed in the patient compartment in a location behind the streetside cabinets in the wheel well area. This location shall be easily accessible to the OEM tie-ins. The heating unit shall be capable of producing 50,000 BTUs.

The heating element of this HVAC system shall be capable of raising the interior temperature from 32° F to 68°F (0°C to 20°C) within 30 minutes in accordance to the forthcoming NFPA standards. The heat portion of the HVAC unit shall be rated at no less than 50,000 BTU.

The heated air exit from a plenum in the lower streetside of the module. The heated air shall blow from below the side wall and just above the roll up floor in full length vent. This ventilation system shall allow heat to blow on the patient immediately and circulate upward while also creating a radiator effect as the heated air warms the side wall. The interior ducting shall be designed such that debris or liquids cannot enter the plenum area.

The heating system shall meet the requirements of AMD 012, Interior Climate Control Test.

## AIR CONDITIONING

The air conditioning unit shall be installed in the patient compartment in a location on the curbside bulkhead of the patient compartment in a dedicated cabinet. This cabinet shall be constructed of the same aluminum structure

## DEMERS TYPE I MXP150

as the other cabinets and shall allow for proper air flow and circulation for the system. No wood products shall be used to line or construct this compartment as this is an area where moisture can be prevalent. This air conditioning unit shall be capable of cooling at a rate of 35,000 BTUs.

Five (5) universally adjustable vents with manual closures shall be installed above the streetside cabinets in an angled plenum and shall project at a downward angle toward the patient and crew. A separate hose shall run to each individual vent to maximize air flow.

This air conditioning system shall comply to the forthcoming NFPA air conditioning standard of lowering the interior temperature from 95°F to 78°F (35°C to 25°C) at a minimum of 40 percent relative humidity within 30 minutes.

This air conditioning system shall comply with the testing set forth in AMD 012, Interior Climate Control Test. Independent testing shall be completed and the results shall be available with this bid proposal.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### VENTILATION

Fresh air intakes and exhaust fans shall be installed. These fans shall allow adequate air exchange within cab and patient compartment while parked or in motion. The exhaust fan shall be controlled by the multiplexing electrical system and shall operate on 3 speeds (Low, Medium and High) To move air in a more efficient manner, a dual exhaust vent system with two exterior exhaust ports shall be installed. The exhaust vents shall exit from the streetside of the vehicle above the wheel wells. Fresh air exhaust fan shall provide a minimum of 400 cfm.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### INTERIOR NOISE

The sound level in the patient compartment shall not exceed 80 decibels while under normal driving conditions. The manufacturer shall provide the independent testing documents in accordance to AMD 006, Patient Compartment Sound Level to ensure this requirement is satisfied. Due to the importance of patient pacification and crew safety, no exceptions or deviations will be considered for this requirement.

## DEMERS TYPE I MXP150

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### CARBON MONOXIDE DETECTOR

The patient compartment shall be sealed and vented so that the interior carbon monoxide level does not exceed the maximum ppm of CO above ambient conditions. A carbon monoxide detector shall be installed in a conspicuous location yet not interfere with patient care

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### PATIENT COMPARTMENT COMPONENTS

#### GOOSENECK LIGHT IN ACTION AREA

A flexible gooseneck style map light shall be installed in the action area. This light shall be activated by a switch on the light head.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

#### OVERHEAD ACTION AREA LIGHT

A fluorescent light mounted in the action area shall be installed to provide additional lighting to the action area counter. This light shall be controlled by a switch on the rear control panel and from the light head.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

## DEMERS TYPE I MXP150

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

### REAR RADIO SPEAKERS

A pair of rear radio speakers shall be installed in an upper portion of the patient compartment in an area not interfering with patient care. The speakers shall be controlled by a rheostat volume control on the action area wall

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

### WORKING LIGHT TIMER

An automatic dial style timer shall be installed on the curbside of the vehicle. This timer shall be manually wound to a specified time to activate a bank of lights in the patient compartment. The timer shall automatically deactivate the lights when the preset time is expired.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

### CHROME GRAB HANDLE

Two (2) additional 12" chrome grab handles shall be mounted on the rear curbside of the patient compartment and at the side entry door. These additional grab handles shall be positioned in a location that is easy for the attendant to grip when entering the vehicle from the rear entry doors. This grab handle shall be securely fastened to the curbside wall into a mounting plate structure.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

# DEMERS TYPE I MXP150

## OVERHEAD GRAB RAIL

One (1) 90” chrome overhead grab rail shall be mounted in the patient compartment ceiling. The grab rail shall be securely fastened to the roof structure tubes in the patient compartment ceiling at each mounting location. Grab rails attached to roof structures at the ends, or those utilizing aluminum backer plates shall not be accepted.

The grab rail shall be at least 1.25” in diameter and shall incorporate a textured grip to ensure a secure grip when the attendant is wearing gloves. The grab rail shall be able to hold at least 300lbs. without showing signs of flex or distortion.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## OXYGEN AND SUCTION

### OXYGEN, MAIN SUPPLY AND INSTALLATION

The completed ambulance shall have a piped medical oxygen system capable of storing and supplying a minimum of 3,000 liters of medical oxygen. The main oxygen supply shall be from a compressed gas cylinder(s) that the purchaser will provide and install at the time the vehicle is placed in service. An oxygen line pressure regulator shall be included in the oxygen system. Low pressure, electrically conductive, hose and fittings approved for medical oxygen shall also be installed. All oxygen piping shall be concealed, loomed and not exposed. Where oxygen lines may travel through a hole, a grommet shall be used to prevent premature wear of the oxygen line. All oxygen tubing shall be secured yet shall be still accessible for maintenance. Oxygen shall be piped to a self-sealing oxygen outlet with a minimum flow rate of 100 LPM at the outlet. The oxygen system shall be tested prior to delivery and the results of the test shall be provided with the end user documentation. A label shall be provided near the oxygen tank stating: “This oxygen system was tested in accordance with NFPA 1917 and meets the requirements thereof”. The label shall be signed and dated by an authorized representative of the ambulance manufacturer or test agency.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## CYLINDER CONTROLS

The oxygen cylinder controls shall be accessible from the inside the vehicle. The cylinder shall be manually controlled from the tank via a regulator. Access to this regulator shall be through an easy to open clear acrylic access window.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## OXYGEN CYLINDER PRESSURE INDICATOR

Oxygen cylinder pressure shall be able to be viewed from a gauge located in primary medical center area. This gauge shall be easy to read for the crew member in the attendant seat position.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## OXYGEN OUTLETS

Two (2) surface mounted oxygen outlets shall be installed in the completed ambulance. Both shall be installed on the medical center wall. These outlets shall be tested prior to delivery of the ambulance.

Exact location of the oxygen outlets shall be located on the provided drawings.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## CYLINDER WRENCH

An oxygen cylinder changing wrench shall be installed in an easy to access location. This cylinder shall be attached to the compartment with enough tethering material to efficiently use this tool whether right or left handed.

## DEMERS TYPE I MXP150

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### OXYGEN TANK STORAGE

The oxygen tank shall be stored in an outside compartment in a storage compartment designed for the cylinder. The cylinder shall be able to be accessed and removed from the outside, and shall be able to be controlled at the regulator from the inside. A chrome vent with an interior rubber debris barrier shall be installed on the exterior on the oxygen compartment door to properly ventilate this compartment of any leaking oxygen. The oxygen tank storage compartment shall be clearly identified to indicate the compartment is for oxygen storage only.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### OXYGEN TANK BRACKET

A Zico QR-MV Oxygen cylinder bracket shall be installed on the back of the oxygen compartment to accommodate different sizes of oxygen cylinders. This bracket shall be securely fastened to reinforcement mounting plate. Any oxygen tank bracket shall be tested to a force equal to 25 times the weight of a full tank for which the cylinder bracket was designed. The oxygen cylinder bracket and testing results shall conform to forthcoming edition of NFPA 1917 Standard for Automotive Ambulances and AMD 003, Oxygen Tank Retention System Static Test.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### SUCTION

A RICO RS4 electrically control suction system shall be installed in the patient compartment on the action area wall. The vacuum control shall be located in a position that can be easily operated by the attendant. The suction pump shall be located behind the streetside cabinetry an area that is easily accessible. The suction pump shall be securely mounted to the floor to eliminate any unnecessary vibration. The suction system shall be control from the

## DEMERS TYPE I MXP150

rear control panel. A vacuum indicator gauge shall be provided this gauge shall display increments at least every 100 mm Hg and a minimum total range of 0 to 760 mm Hg.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### PATIENT CARE ACCESSORIES

#### IV HOLDER

Four (4) recessed mounted IV hangers specifically designed for holding IV containers shall be installed, including hook and loop straps to adequately secure an IV bag/bottle. The IV holder shall recess into the ceiling creating minimal protrusion into the patient compartment when not in use.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### WASTE AND SHARPS DISPOSAL

A kick out style for sharps and waste shall be installed under the squad bench. An easy to locate ball style kick switch shall be installed to the side of the drawer. This type of system shall allow the attendant to quickly access a tip out door with his or her foot to avoid unnecessary contamination of the drawer face from their hands.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## COTS AND FASTENERS

### PATIENT COT RETENTION

The floor of the patient compartment shall be equipped with Stryker model 6370 cot mounts to except a Stryker cot. These cot mounts shall be securely bolted to the floor through the sub floor and into ½” 6061 –T6 aluminum reinforcement plates. Backer plates that are not integral to the floor structure shall not be permitted as of these may have a tendency to vibrate loose over time. This patient cot retention system shall be tested at a minimum force of 2200 pounds applied longitudinally and laterally. The patient cot retention requirements shall conform to the requirements set forth in AMD 004 Litter Retention System Static Test.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## ELECTRICAL SYSTEMS AND WARNING DEVICES

### OVERVIEW

An electrical system separate of the chassis electrical system shall be installed. This electrical system shall be a regularly used system by the manufacturer and shall incorporate efficient, solid state technology. The completed ambulance shall be equipped with a fully operational solid state multiplexing electrical system. Multiplexing electrical systems use fewer electrical components yet allows for multiple configurations of electronic functions with little to no excess wiring. A multiplexing electrical system is the preferred electrical system by the purchaser due to the flexibility in programming and the ability to customize the electrical system to the needs of the purchaser. Specific details on this multiplexing electrical system shall be described below. Printed circuit board or, so called “hardwired” electrical systems shall not be acceptable.

# DEMERS TYPE I MXP150

The ambulance manufacturer shall have significant experience in installing multiplex and electrical systems. The purchaser is not interested in prototypical or logical systems that are untested or unproven by the ambulance manufacturer. The multiplex system specified here shall be fully developed, tested, in service for at least 10 years and shall be installed on at least 2000 units. Documentation of electrical systems installed and in-service shall be provided at the purchaser's request.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## SERVICEABILITY

The ambulance multiplexing electrical system shall be designed to be maintained and service easily. In the unlikely event of an electrical problem, the ambulance's electrical system shall be able to be connected remotely to the Internet and shall be able to be diagnosed, programmed or reprogrammed by a service technician at the ambulance manufacturer's main facility. This multiplex electrical system shall be proven to be virtually maintenance free. A failure (warranty) rate of less than 1% is required because this agency wishes to purchase an ambulance with the utmost reliability in service. Documentation of warranty claims relating to the electrical system shall be provided to the purchaser upon request.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## GENERAL

Any low voltage electrical systems or warning devices installed on the ambulance shall be appropriate for the mounting location, intended electrical load and shall meet the specific requirements of the electrical section.

# DEMERS TYPE I MXP150

## ELECTRONIC CONTROLLER UNITS

Multiplexing electrical system shall consist of solid state electronic controller units mounted in the electrical control panel. Electronic controller units shall act as the central communications system for the entire electrical system. These electrical controller units shall command all electrical components installed by the manufacturer in the cab and in the patient compartment. Each electronic controller unit shall be self-diagnostic with easy-to-read LED displays on the front for the sides of electronic controller units. Clearly labeled wiring for each electrical component shall be installed with high quality connections which plug into the electronic controller unit. A CD of the programming and the electrical schematics as well as detailed printed schematics of all components and wiring shall be provided with the completed ambulance.

All Electronic controller units shall be sealed in a weatherproof exterior casing. The electronic controller units main interior control panel shall be coated in weather resistant epoxy prior to delivery to the ambulance manufacturer. All electronic controller units shall be installed in electrical control panel compartment for centralized location.

Electronic controller units shall be programmed using already established automotive communication language. Electronic controller units shall be programmed to communicate and receive signals in the SAE J1939 protocol. This type of system is preferred to allow for future expansion and flexibility to the multiplex an electrical system. No auxiliary printed circuit boards, circuit breakers or relays shall be used in future expansion or to assist in the functionality of standard electrical components. All electrical components shall be run through the electronic controller units.

Electronic control units shall be fully programmable by the manufacturer using the SAE J1939 protocol. The completed program shall be kept on file by the ambulance manufacturer for each individual customer.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## PERFORMANCE TESTS

All electrical system testing shall be completed on the ambulance prior to delivery. Continual testing shall be provided by the manufacturer on an ongoing basis. The low voltage electrical system performance test shall comply with the most current revisions of all state and federal requirements.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## WIRING

All wiring for the electrical systems shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 percent of the maximum current for which the circuit is protected. Voltage drops in all wiring from the power source to the component shall not exceed 10 percent. Proper grounding techniques shall be used for all wiring in this vehicle. All circuits shall otherwise be wired in conformance with SAE J1292, *Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring*. None of the ambulances electrical wiring and components shall terminate or originate in the oxygen storage compartment except for the oxygen controlled solenoid, compartment light, and switch plunger or trigger device.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## WIRING AND WIRE HARNESS CONSTRUCTION

All wiring and harness construction shall conform and comply with the forthcoming edition of NFPA 1917 Standard For Automotive Ambulances.

The ambulance wiring harnesses shall be a continuous run to each electrical component without Scotch-lock type connectors or crimp type connectors to connect to a component. The ambulance wiring shall contain no splices in the main wiring harness. The connectors on each end of the electrical component shall be aircraft standard and shall be machined crimped. Hand crimped electrical connectors are not permitted by the purchaser as they have been proven to be prone to premature failure.

All ambulance wiring harnesses shall be enclosed in a metal or a plastic loom. This loom shall run from the electronic controller units to specified electrical component. Instances where conduit must travel through a tube structure, a rubber grommet shall be placed in the hole to prevent premature wear of the conduit and wiring. All wiring harnesses shall be secured to the roof tube structures with insulated clamping fasteners.

All insulated wire and cable shall conform to SAE J1127, *Low Voltage Battery Cable*, or SAE J1128, *Low Voltage Primary Cable*, type SXL, GXL, or TXL. When conductors are used, they shall be constructed in accordance with SAE J1127 or SAE J1128, except where instances require special strand construction. Conductor materials and stranding, other than copper, shall be permitted if all applicable requirements for physical, electrical, and environmental conditions are met as dictated by the component. Physical and dimensional values of conductor insulation shall be conform with the requirements of SAE J1127 or SAE J1128, except in instances where special conductor insulation is needed. The overall covering of conductors shall be moisture-resistant loom

## DEMERS TYPE I MXP150

that has a minimum continuous rating of 194°F (90°C) except in areas where the loom may be exposed to higher temperatures.

The overall covering of jacketed cables shall be moisture resistant and have a minimum continuous temperature rating of 194°F (90°C), except for cable installations where the wiring may be exposed to higher temperatures. All wiring connections and terminations shall use a method that provides a positive aircraft standard connection. This connection shall be a machine made consistent quality connection. Wiring connections and terminations shall be installed in accordance with the device manufacturer's instructions. Wire nut, insulation displacement, and insulation piercing connections shall not be used. All ungrounded electrical terminals and electrical panels shall have protective covers or shall be in enclosures.

All connections to the electrical components shall include a minimum 6 in. service loop of wire or harness and shall be provided at all electrical components, terminals, and connection points. All wiring connecting to all fixtures shall utilize easy plug in style connectors.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### WIRING IDENTIFICATION

All wiring shall be identified for its designated purpose every 2 feet at a minimum. The wiring identification shall include the exact location to the electronic controller unit. The electrical schematic provided with the completed ambulance shall identify the exact location of the wire to its component and its pin location on the electronic controller unit. Wiring identification shall be clearly visible and shall be machine printed on the insulated wire.

Circuits shall be provided with properly rated low voltage overcurrent protective devices. Such devices shall be readily accessible and protected against heat in excess of the overcurrent device's design range, mechanical damage, and water spray. Circuit protection shall be accomplished by utilizing fuses, circuit breakers, fusible links, or solid state equivalent devices.

If a mechanical-type device is used, it shall conform to one of the following SAE standards:

- SAE J156, *Fusible Links*
- SAE J553, *Circuit Breakers*
- SAE J554, *Electric Fuses (Cartridge Type)*
- SAE J1888, *High Current Time Lag Electric Fuses*
- SAE J2077, *Miniature Blade Type Electrical Fuses*

## DEMERS TYPE I MXP150

The complete set of wiring schematics shall clearly identify all wiring locations, routing, and component connection. A sample document shall be available to the purchaser on request to examine the quality of the electrical schematic.

All instances of wiring not conforming to the standards established in this document shall be documented at the time of the proposal. Failure to comply with this requirement shall be cause for rejection of the proposal.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### MASTER ELECTRIC PANEL

The ambulances multiplexing electrical system shall incorporate a master circuit breaker panel with relay, fuses or other electronic, non-disposable, current protection devices. Each circuit shall comply with SAE J553 Type I, or Type III. Each circuit breaker shall be clearly labeled for its function and shall match the electrical schematic provided upon delivery. All relays and fuses critical to power distribution to the module shall be centrally located in the Electrical Control Panel. The panel shall be sealed by a removable panel and shall not be designed in same manner as a cabinet. Electrical cabinets designed to similar methods as patient compartment cabinets are not desired by the purchaser as this could be easily confused or used as a storage compartment.

For future upgradability, one extra 15 amp circuit breaker shall be installed. This shall be wired and shall be ready for a future programmable function with the multiplexing electrical system.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## GROUNDING

Dedicated grounding locations for all appliances, circuits, etc. shall be furnished. The use of appliance mounting screws/hardware shall not be used for grounding purposes. Star washers or unapproved, untested grounding methods shall not be used.

The ambulance body and accessory electrical equipment shall be served by circuit(s) separate and distinct from vehicle chassis circuits.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

## SWITCHING REQUIREMENTS

Switches, relays, terminals, and connectors shall have a direct current (dc) rating of 125 percent of maximum current for which the circuit is protected.

## MINIMUM CONTINUOUS ELECTRICAL LOAD

In accordance to the forthcoming edition of the NFPA 1917 Standard for Automotive Ambulances, the minimum continuous electrical load shall be required to operate the ambulance during emergency operation. The following in a stationary mode during emergency operations:

(as proposed in the NFPA 1917 Standard for Automotive Ambulances)

- The propulsion engine and transmission
- All legally required clearance and marker lights, headlights, and other electrical devices except windshield
- wipers and four-way hazard flashers
- The radio(s) at a duty cycle of 10 percent transmit and 90 percent receive (for calculation and testing purposes, a default value of 5 A continuous)
- The lighting necessary to illuminate walking surfaces at entry points and 50 percent of the total compartment light load as required by this standard.

## DEMERS TYPE I MXP150

- The minimum optical warning system required in Section 7.8, where the ambulance is blocking the right-of-way
- The continuous electrical current required to simultaneously operate an additional 20 amp load.
- Cab air conditioning (at coldest setting with highest blower speed).
- Patient module air conditioning (at coldest setting with highest blower speed).
- Patient module dome lighting (in the high intensity setting).
- Other warning devices and electrical loads defined by the purchaser as critical to the mission of the ambulance.

### VOLTAGE ALARM

A voltmeter shall incorporate an audible voltage warning should the system voltage at the battery or at the master load disconnect switch drops below 11.8 V for 12 V nominal systems 120 seconds. This voltage alarm shall be programmed into the multiplexing electrical system.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### LOAD MANAGEMENT

The multiplexing electrical system shall be programmed to automatically shed electrical load should the electrical output rating of the installed alternator drop below a programmed voltage level. Electrical components shall shed in order of priority and shall be programmed into the multiplexing electrical system. External load management systems or load management systems not programmable shall not be considered as the purchaser requires this electrical system flexibility.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### BATTERIES

Two (2) batteries shall be installed in addition to the (2) OEM battery. The two batteries for the chassis shall be located in a compartment under the ALS compartment its own ventilated compartment. Two (2) batteries for the

## DEMERS TYPE I MXP150

module and patient compartment components be of like grouping. The batteries for the module power shall be installed in a compartment under the patient compartment floor and accessible through an aluminum diamond plate door in the wheelwell. All batteries regardless of location shall be accessible via a heavy duty battery slide out tray. The battery system cold cranking amps (CCA) rating shall meet or exceed the minimum CCA recommendations of the engine manufacturer.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### CONTINUOUS ELECTRICAL LOAD

With the engine off, the battery system shall be able to provide a minimum continuous electrical load for 10 minutes without discharging more than 50 percent of the reserve capacity and then restart the engine. Compliance of the battery system shall be verified on the ambulance prior to delivery.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### ISOLATOR

A battery isolator shall be installed to separate the chassis batteries from the patient compartment batteries. A Cole-Hersee heavy duty switch shall be installed on the driver's seat base to override the isolator to all batteries to work with the chassis in the event of an emergency. The switch shall be clearly labeled for its intended function.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### BATTERY CHARGER

An onboard battery conditioner or charger shall be provided for maintaining batteries in a fully charged condition.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## SHORELINE

A 15amp shoreline shall be installed on the driver's side of this vehicle. The shoreline shall be installed in an aluminum box manufactured to fit this shoreline. The box shall be attached to the inside of the module so the shoreline has a positive attachment point as well as additional protection for the unit. This shoreline receptacle shall be UL tested and listed for external use. When the shoreline is plugged into an exterior source, all 125VAC 60Hz outlets shall be energized. A label shall be included near the shoreline indicating its function and amperage. The shoreline shall be recessed into the module and shall include a weather proof low profile cover.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## SEQUENCER

Sequential switching shall be integrated into the multiplexing electrical system to energize the optical warning devices and other high current devices. External sequencers shall not be considered by the purchaser as the specified solid state electrical system has this capability.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## TEMPERATURE EXPOSURE

Any alternator, electrical starting device, ignition wiring, distributor, or ignition coil shall be moisture resistant and protected such that it is not exposed to a temperature that exceeds the component manufacturer's recommendations.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## ELECTROMAGNETIC INTERFERENCE

Electromagnetic interference suppression shall be provided as a standard part of the electrical system. This suppression shall conform to the radiation limits specified in SAE J551/1, Performance Levels and Methods of Measurement of *Electromagnetic Compatibility of Vehicles, Boats(up to 15 m), and Machines (16.6 Hz to 18 GHz)*.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## INTERIOR POWER SOURCES

### OVERVIEW

The completed ambulance shall be equipped with two forms of internal power sources. These internal power sources shall allow attendants in the ambulance to plug in additional accessories or to charge battery powered devices when needed.

All power point outlets specified here shall be properly tested and shall be isolated with a Schottky-style diode to isolate the medical equipment batteries from other loads. The diode shall be located in an accessible location and be electrically connected between the distribution panel and the power point connectors. The diode shall be heat sunked and shall have an inverse voltage rate of at least 45 volts. All wiring to the 12V outlets shall be clearly labeled and shall be one continuous run from the diode to the outlet.

125VAC outlets shall be energized from the shoreline and/or from the inverter if equipped. All 125VAC outlets shall be UL certified, shall be clearly identified on the unit and shall be rated to 60Hz. A 125VAC GFCI shall be installed beyond the shoreline and shall disable all 125VAC outlets when tripped. The GFCI shall be located in an easy to access yet inconspicuous location on the vehicle for ease of resetting if needed. The 125VAC wiring from the GFCI shall run to each of the individual outlets. All patient compartment outlets shall be three (3) line voltage duplex receptacles conforming to NEMA 5-15.

All wiring shall be rated to handle the load of the electrical component specified. The 125V and 12V wiring and associated equipment shall be tested by the ambulance manufacturer prior to delivery. The testing criteria shall include polarity and load demand of all receptacles shall be tested to verify that wiring connections have been properly made.

## DEMERS TYPE I MXP150

Electrical continuity shall be verified from the chassis or body to all line voltage electrical enclosures, light housings, motor housings, light poles, switch boxes, and receptacle ground connections that are accessible to personnel in normal operations.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### 12V OUTLETS

The ambulance shall be equipped with three (3) 12V “power point” style outlets. These 12V outlets shall be protected. These outlets shall be wired to the conversion batteries and shall be energized when the module master switch is activated. Two (2) 12V outlets shall be installed on the streetside of the vehicle below the monitor area and one (1) shall be installed in the ALS cabinet.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### 125VAC OUTLETS

The ambulance shall be equipped with two (2) 125VAC 60 Hz grounded outlets. These outlets shall be wired to the conversion batteries and shall be energized when the module master switch is activated. One (1) 125VAC outlet shall be installed on the streetside of the vehicle below the monitor area and one (1) shall be installed in the ALS cabinet.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## CONTROL PANELS

### HEADS UP CONSOLE

The front control panel shall be integrated into the front dash console. This heads up console shall fit in the OEM holes of the dash. In this configuration, the OEM radio shall be moved to an engineered bracket on the engine cowl. This shall allow more room for the mission critical ambulance components.

The front control panel shall incorporate tactile switches with a different feel than the OEM chassis controls. Rocker switches and touch switches shall be used to control the ambulance functions. All switches and control buttons shall carry no load. Each switch and button on the control panel shall be connected to a printed circuit board that shall transmit the signal to the multiplexing systems Electronic Controller Units. Each switch shall be illuminated and shall incorporate a confirmation light on the switch. The front console layout shall incorporate the following controls:

### HEAT/AC TOUCH CONTROLS

The rear HVAC system shall be able to be controlled for the cab. Push buttons to raise and lower the patient compartment temperature shall be clearly identified. Push buttons for fan speed control shall also be located next to the temperature controls. Temperature and fan speed shall be raised and lowered by pressing the appropriate buttons. A digital display above the temperature control buttons shall display the patient compartment temperature, the fan speed, as well as ambient temperature info. This Heat/AC Touch controls shall also be set to automatic to allow the patient compartment to automatically regulate its temperature. Two (2) auxiliary buttons shall be installed on this control panel for future expansion if needed. These buttons shall be controlled by the multiplexing system's Electronic Controller Unit.

### MODULE DISCONNECT SWITCH

A separate on/off switch away from the master control switches shall be clearly identified as the Module Disconnect switch. This switch shall serve as the primary activation power source for the patient compartment and emergency lighting components. This switch shall be programmed via the multiplexing Electronic Controller Unit.

# DEMERS TYPE I MXP150

## MASTER CONTROL SWITCHES

Twelve (12) tactile rocker switches shall be installed in the center of the Heads Up Console. These switches shall control the emergency functions of the ambulance. Each switch shall be distinguishable at a glance as an emergency control function switch. All switches shall be backlit and shall include a confirmation light at the bottom of the switch to indicate a signal has been sent to the Electronic Controller Unit. The top row of switches shall activate the following controls:

### TOP ROW

3 position Primary/Secondary Switch: This switch shall activate the primary and secondary lighting configurations programmed into the Electronic Controller Unit.

Wig Wag Switch: This switch shall activate the wig wag headlights if equipped

Amber Switch: This switch shall activate the rear amber lights

Right Scene light Switch: The switch shall activate the right scene lights when the side entry door is not open.

Rear Load Light Switch: This switch shall activate the rear load lights when the rear doors are not open.

Left Scene Light Switch: This switch shall activate the left scene lights.

### BOTTOM ROW

Alarm Cancel Switch: This switched shall be programmed by the multiplexing electrical system to cancel multiple alarms. This momentary switch shall cancel the patient indicator light alarms, the backup alarm and the low voltage alarm.

Door Lock Switch: This switch shall lock and unlock the patient compartment and chassis power door locks.

Reading Light Switch: This switch shall activate the reading light above the passenger seat.

Floodlight Switch: This switch shall activate the front floodlights if equipped.

Additional switch locations shall be included on the Heads Up Console for purchaser specific options and or future upgrades. These switches shall also be attached to printed circuit board behind the switch and shall be programmable by the multiplexing system and controlled by the Electronic Controller Unit.

# DEMERS TYPE I MXP150

## INDICATOR LIGHTS

Patient Indicator Lights: the Red/Amber/Green patient indicator lights shall be installed on the front Heads Up Console. An audible alarm shall sound when activated from the patient compartment rear control console. The alarm shall be cancelled by the Alarm Cancel Rocker Switch.

Door Ajar Indicator: This shall illuminate when an entry door is ajar. And audible alarm shall sound when this indicator light is flashing.

Compartment Ajar Indicator Light: This shall illuminate with any compartment door is ajar. An audible alarm shall sound when this indicator light is flashing.

Battery 1 Indicator Light: This light shall illuminate when the battery is operational.

Battery 2 Indicator Light: this light shall illuminate when the second battery is operational.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## REAR CONTROL PANEL

The rear control panel shall incorporate tactile rocker switches on the action area wall. The rocker switches shall be easily accessible from the head attendants seating position. The rear rocker switches shall be a completely sealed system and impervious to fluids, dust or other contaminants. Switches shall be easily cleaned and sanitized. All touchpad controls switches on the rear console shall be sealed to prevent and debris or fluids from entering the panel. Rocker switches shall be wired to a printed circuit board and shall carry a signal to the Electronic Controller Unit. All rocker switches shall be clearly labeled for the intended function. Rocker switches in the rear patient compartment shall be programmed to operate all of emergency functions and patient care functions. The following components shall be controlled from this rear switch panel:

Electric Oxygen Solenoid: This switch shall be programmed to shall engage the onboard electric oxygen solenoid to allow oxygen to be distributed to the outlets

Patient Compartment Lighting: This switch shall be programmed to allow control of the lighting within the patient compartment.

Suction System: This switch shall be programmed to activate the onboard suction

## DEMERS TYPE I MXP150

Patient indicator lights: This switch shall be programmed to alert the driver of changes to the patient status. There shall be an individual switch shall be programmed for the red, amber and green Patient Indicators.

Fan Speed: This switch shall be programmed shall allow for manual control of the HVAC fan speeds

Exhaust Fan: This switch shall be programmed shall allow for the manual control of the patient compartment exhaust fan.

Cabinet Lighting (when Equipped): This switch shall be programmed shall activate all of the cabinetry lighting.

Power Door Locks: This switch shall be programmed shall be programmed to control the power locks.

Overhead Reading Light: This switch shall be programmed shall be programmed to control and overhead reading light.

All rocker switch shall be programmed in the rear patient compartment shall be able to be reprogrammed and maintained through the vehicles multiplexing electrical system.

### RHEOSTAT VOLUME CONTROL

A rheostat volume control shall be installed to control the speakers in the rear patient compartment.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### AUTOMOTIVE STYLE HVAC CONTROL

HVAC shall be rheostat controlled from the rear control panel. This system shall work in tandem with the Heads Up Console front control panel.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## VISUAL WARNING DEVICES

### VISUAL WARNING DEVICES

Each ambulance shall have a system of optical warning devices as specified in this section. All warning lights shall comply with the standards set forth in the AMD 024, Perimeter Illumination Test as well as the requirements established in the forthcoming edition of the NFPA 1917 Standard for Automotive Ambulances.

The visual warning system on the ambulance shall have two distinct programmed sequences during emergency operation. These shall be defined in this specification as Primary and Secondary. The primary mode shall signal to drivers and pedestrians that the ambulance is responding to an emergency and is calling for the right-of-way. The secondary mode shall indicate to the motorists that the ambulance is stopped and is blocking the right-of-way.

The bidder shall comply with the lighting manufacturer as well as the layout of the lighting package specified. The bidder shall comply where specific vendor and model numbers are described as these lights are purchased from a common vendor and can be purchased by all manufacturers.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### FLASH RATE

The minimum flash rate of any optical source shall be 75 flashes per minute, and the minimum number of flashes at any measurement point shall be 150 flashes per minute. Flash patterns shall be easily programmable through the multiplexing electrical system. External flasher units designed to operate the flash pattern of the vehicle are not preferred.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## FRONT MODULE BODY LIGHTS

### CAB RISER LIGHTS

Six (6) Whelen 400 LED lights shall be installed in the aerodynamic cab riser specified. (2) Red LED lights shall be installed on each side of the cab riser and shall be visible through the contoured red Lexan lens housing. (2) Clear 400 LED lights shall be installed in the center of the cab riser in the clear contoured Lexan housing. These lights shall flash in an alternating pattern where each red side flashes first followed by the clear lights. These lights shall flash in a pattern programmed by the multiplexing electrical system.

Lights shall be installed in accordance to the component mounting specifications described in the previous section of this bid proposal. These lights shall comply with the lighting requirements established in KKK-A-1822 F revision and the AMD 024, Perimeter Illumination testing requirement.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### GRILLE LIGHTS

Two (2) Whelen TIR5 500 Series LED grille lights shall be installed in the lighting manufacturers flange OEM on each side of the chassis front grille. The grille lights shall not interfere with air flow into the chassis as they will be installed on the upper horizontal panel of the grille.

Lights shall be installed in accordance to the component mounting specifications described in the previous section of this bid proposal. These lights shall comply with the lighting requirements established in KKK-1822-A F revision and the AMD 024, Perimeter Illumination testing requirement.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## WIG WAG LIGHTS

Two (2) Whelen TIR5 500 Series LED clear wig wag lights shall be installed in the lighting manufacturers flange OEM on each side of the chassis front grille. The grille lights shall not interfere with air flow into the chassis as they will be installed on the lower horizontal panel of the grille. The lights shall be programmed by the vehicle's multiplexing electrical system to automatically flash back and forth. An external wig-wag flashing module shall not be used as this is integrated into the multiplexing systems programming.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## SIDE BODY WARNING LIGHTS

## INTERSECTION LIGHTS

Two (2) Whelen 700 Series LED intersection lights shall be installed on the forward fender of the chassis. These lights shall be located in a position forward far enough to provide adequate clearance of an intersection. The intersection lights shall be programmed in the specified multiplexing electrical system to flash its designated pattern when the vehicle is in Primary and Secondary Mode.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## UPPER MODULE WARNING LIGHTS

Three (3) Whelen 900 Series side body warning lights shall be installed on each side of the upper module body. These lights shall be at a minimum of 75" from the bottom edge of the module. The lights shall be evenly spaced at the upper front corner, upper center and upper rear corner of the each side of the module body. Each warning lights shall have a chrome flange installed around the light.

Lights shall be installed in accordance to the component mounting specifications described in the previous section of this bid proposal. These lights shall comply with the lighting requirements established in KKK-1822-A F revision and the AMD 024, Perimeter Illumination testing requirement.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

## LOWER MODULE WARNING LIGHTS

Two (2) Whelen 700 Series warning lights shall be installed above the wheel well fenderette on each side of the module. These lights shall flash in an alternating pattern with the upper module lights. Each light shall have a chrome flange.

Lights shall be installed in accordance to the component mounting specifications described in the previous section of this bid proposal. These lights shall comply with the lighting requirements established in KKK-1822-A F revision and the AMD 024, Perimeter Illumination testing requirement.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

## REAR MODULE WARNING LIGHTS

Two (2) Two Whelen 900 Series Red LED lights shall be installed in the upper corners of the rear module. Two (2) Whelen 700 Series red warning lights shall be installed next to each rear 900 series warning light and shall act as upper brake lights. All rear module lights specified shall include chrome flanges. One (1) 700 Series amber LED light shall be installed in the center of the rear module body.

## DEMERS TYPE I MXP150

Lights shall be installed in accordance to the component mounting specifications described in the previous section of this bid proposal. These lights shall comply with the lighting requirements established in KKK-1822-A F revision and the AMD 024, Perimeter Illumination testing requirement.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### REAR FACING DOOR LIGHTS

Two (2) Whelen TIR3 Red LED lights shall be installed on the inside of all exterior compartments as well as the side and rear entry doors. These lights shall flash when the rear doors are open to serve as an additional warning to motorists the compartment and patient entry door are open.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### SCENE AND LOAD LIGHTS

#### SCENE LIGHTING

Six (6) Whelen 900 Series Halogen scene lights shall be installed on the streetside and curbside of the upper module body at least 75" from the bottom edge of the module. Three (3) lights shall be installed on the upper front and rear corner of each side of the body adjacent to the upper rear side warning lights. The side scene lights shall project at a downward 32 degree angle to allow for adequate lighting of the area surrounding the sides of the ambulance. The side scene lights shall be controlled independently for each side by a switch on the Heads Up console in the front dash. The scene lights shall comply with the testing requirements detailed in AMD 024, Perimeter Illumination Test.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## LOAD LIGHTS

Two (2) Whelen 600 Series Halogen load lights shall be installed on the upper portion of the rear module above the rear doors. These lights shall project at downward angle to adequately light the area around the rear of the ambulance. These lights shall automatically illuminate when the rear patient compartment doors are opened. The rear load lights shall also be controlled by a switch on the Heads UP console on the front dash when the doors are not opened. The load lights shall comply with the testing requirements detailed in AMD 024, Perimeter Illumination Test.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

## AMBULANCE EXTERIOR DOT LIGHTING

Eighteen (18) ICC and DOT LED lights shall be installed on the corner roof extrusion of the ambulance. (5) Five Amber ICC lights shall be installed on the front of the module. (2) Two Amber LED ICC light shall be installed on the upper front corners of each side of the module. Two (2) amber LED lights shall also be installed on the front corner extrusion at the on each side of the module just above the corner stone guards.

(5) Five red LED ICC lights shall be installed on the rear the module and two (2) red ICC LED lights shall be installed on the upper rear corners of each side of the module. Two (2) red LED lights shall also be installed on the rear corner extrusion on each side of the module just above the rear corner guards.

The lower side marker lights specified above shall flash in conjunction with the turn signals.

All Exterior ambulance ICC lighting shall conform to the requirements of FMVSS.

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

## STOP, TAIL, AND DIRECTIONAL LIGHTS

The rear of the ambulance shall be equipped with round LED rear tail lights installed in the rear kick plate. There shall be two (2) round Red LED lights to indicate when the unit is braking and when the turn signal is activated. One (1) round LED clear light shall activate when the vehicle is placed in Reverse. in These lights shall activate when the vehicle brakes, when the turn signal is activated and when the vehicle is in reverse.

## DEMERS TYPE I MXP150

Whelen 900 series LED directional amber turn indicators shall be installed on the rear module above the cast door grabbers.

Additional turn indicators shall be installed on the side of the module in the lower portion adjacent to the 700 Series warning light specified. These lights shall activate only with the turn signals and shall not be overridden as emergency lights.

A Whelen 600 Series LED high mounted rear brake light shall be installed centered above the rear doors. The light shall activate when the vehicles brake is engaged. The 3<sup>rd</sup> upper brake light specified here shall not be overridden as an emergency light at any time. This shall be equipped with a chrome flange.

All directional, stop turn and tail lights shall be clearly visible and shall meet the requirements according to FMVSS 108. There shall be no equipment installed that shall interfere with the visibility of these lights.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

### STORAGE AND PATIENT COMPARTMENT ILLUMINATION

#### PATIENT COMPARTMENT ILLUMINATION

Eight (8) round LED dome lights shall be installed in the ceiling of the patient compartment. These fluorescent lights shall be low profile and shall not protrude into the patient compartment more than 1.5 inches. The LED lights shall be controlled via switches on the rear control panel. Four (4) LED lights of the patient compartment curbside shall be illuminated when the patient compartment entry doors are opened. Fluorescent lights are preferred by the purchaser as this minimizes electrical load.

The patient compartment lights specified here shall be validated by testing in accordance with AMD 016, Patient Compartment Lighting Test.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## CABINET LIGHTING

Each interior cabinet shall contain an LED light located in an area in the cabinet where it shall not interfere with the overall use of the cabinet. The LED cabinet lights shall be programmed into the multiplexing electrical system to be activated via a switch in the rear control console.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## EXTERIOR COMPARTMENT LIGHTING

LED compartment lights shall be installed in each exterior compartment these lights shall be located in is specific location as to not interfere with any exterior storage yet provide maximum illumination into the exterior storage compartment. All exterior compartment lighting shall be programmed into the multiplexing electrical system to illuminate when the compartment door is open.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## STEPWELL LIGHTING

An LED light shall be installed in the step well of the side entry door. This light shall be installed in a location where the light can provide maximum illumination while not serving as a trip hazard. This light shall be programmed by the multiplex and system to automatically illuminate when the side entry door is opened.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## LIGHT TESTING

All patient compartment interior and exterior compartment lights mounted in wet locations shall be tested in conformance with SAE J575, *Test Methods and Equipment for Lighting Devices and Components for Use on Vehicles Less Than 2032 mm in Overall Width*, and shall comply with the following performance requirements of that standard.

All light level measurements shall be made with a light meter with a hemispherical light sensor held against the surface, facing perpendicular to the surface, and not deliberately pointed toward the light source.

Does your bid comply with the specification as written?            Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## AUDIBLE WARNING DEVICES

## AUDIBLE WARNING DEVICES

The ambulances primary audible warning equipment shall be in the form of at least one automotive traffic horn and one electric or electronic siren shall be provided. A Whelen 295HFS2 multiple tone siren shall be installed as the primary siren. This siren shall be easy for the driver to access as it shall be mounted in the Heads Up Console as described in Section 5 of this bid proposal. The siren specified here shall conform to the requirements described in the forthcoming edition of NFPA 1917 Standard for Automotive Ambulances as well as the SAE J1849, *Emergency Vehicle Sirens* and California Administrative Code, Title 13, Article 8:

Does your bid comply with the specification as written?            Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## SPEAKERS

When low profile Siren speakers shall be located behind the front bumper of the chassis. The speaker shall be installed in an engineered housing to fit into OEM bumper mounting holes to ensure a secure fit. This housing shall be designed not to restrict airflow or to reduce the effectiveness of the siren speaker.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## BACKUP ALARM

An electric or electronic backup alarm shall be provided that meets the Type D (87 dB) requirements of SAE J994, *Alarm — Backup — Electric, Laboratory Performance Testing*. Multiplexing electrical system shall include an automatic cancel switch to deactivate the backup alarm. The backup alarm shall be under the rear of the ambulance.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

## COMMUNICATIONS EQUIPMENT

## COMMUNICATIONS EQUIPMENT

The completed ambulance shall come equipped with power and ground wires as well as radio antenna prewires. These prewires shall have termination points in the cab ceiling accessible through the ceiling headliner.

Does your bid comply with the specification as written? Y\_\_\_ N\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_N\_\_\_

# DEMERS TYPE I MXP150

## PAINT AND STRIPING

### PAINT

All exposed metal surfaces that are not plated or stainless steel shall be cleaned and prepared and shall be painted or coated. The paint or coating, including any primer, shall be applied in accordance with the paint or coating manufacturer's recommendation. The paint used shall be an aircraft quality Tristar paint utilizing a thorough a multi-step process. This paint shall be a high built polyurethane surface over epoxy primer application utilizing two (2) acid stabilizing treatments. This paint is preferred by the purchaser as it has a durable lifespan, is resilient to harsh climates and remains pliable even in its hardened state to prevent cracking and chipping from normal ambulance body torsion.

The manufacturer's paint facility shall be free of dust and contaminants that could have an adverse effect on the paint finish. The manufacturer's paint facility shall also be certified to apply the paint specified.

The aluminum structure shall be prepared by thoroughly washing the aluminum body with DX440 final washing product. Following the acid wash of the module, the surfaces shall be sanded smooth to allow for proper primer and paint adhesion. All sand and dust shall be removed with air when sanding is complete.

An aluminum chemical treatment shall be used in preparing the surface. This high temperature treatment shall be vaporized on all surfaces and shall allow for complete coverage.

A two stage epoxy primer layering process shall be added to module and all painted components. This primer stage is critical to the adhesion of the paint and shall be necessary to the paint process. A 1.2 mil Starprox primer application shall be used. After adequate drying time, a second layer of the Starprox primer shall be applied. When completed, the finished primer layer shall be two layers thick and shall be sanded smooth to a surface grade of 9 or 10. This application allows for superior adhesion to the module body.

The finish coat shall be applied and shall be allowed to dry for the paint manufacturers recommended amount of time. A second finish coat shall be applied. All imperfections shall be sanded and reapplied as necessary.

The completed finish shall be free of any runs, fisheyes and other paint blemishes.

Bidders may propose alternative paint process methods. A detailed description of the process, and certifications by the paint manufacturer shall be provided in this bid proposal.

Does your bid comply with the specification as written?            Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_

# DEMERS TYPE I MXP150

## STRIPING

Upon completion and certification of the ambulance, the manufacturer shall supply the standard Star of Life Ambulance package.

The vinyl graphic material shall be light blue reflective automotive quality adhesive vinyl material with white reflective outline. The graphics package shall include:

- Three (3) 6" "AMBULANCE"
- One (1) 4" reverse "AMBULANCE" for the chassis hood
- One (1) 32" Star of Life graphic (blue) for roof installation
- Two(2) 18" Star of Life graphic
- Two (2) 14" Star of Life graphic
- Two (2) 6" Star of Life graphic

Does your bid comply with the specification as written? Y\_\_\_\_ N\_\_\_\_

Does your proposal include an exception to this requirement? Y\_\_\_\_N\_\_\_\_