



**SEDGWICK COUNTY, KANSAS**  
**FINANCE DEPARTMENT**  
**DIVISION OF PURCHASING**  
525 N. Main, Suite 823 ~ Wichita, KS 67203  
Phone: 316 660-7255 Fax: 316-383-7055  
<http://www.sedgwickcounty.org/finance/purchasing.asp>

**REQUEST FOR PROPOSAL**  
**#17-0055**  
**AMBULANCES**

May 15, 2017

Sedgwick County, Kansas (hereinafter referred to as “county”) is seeking a firm or firms to provide five (5) 2017 Ford E450 Super-Duty, RV cutaway chassis 158” wheelbase with an “Ambulance 47A Prep Package,” for Fleet Management which will be used by Sedgwick County Emergency Medical Services (hereinafter referred to as “SCEMS”).

If your firm is interested in submitting a response, please do so in accordance with the instructions contained within the attached Request for Proposal. Responses are due no later than 1:45pm CDT, June 20, 2017.

**All contact concerning this solicitation shall be made through the Division of Purchasing.** Proposers shall not contact county employees, department heads, using agencies, evaluation committee members or elected officials with questions or any other concerns about the solicitation. Questions, clarifications and concerns shall be submitted to the Division of Purchasing in writing. Failure to comply with these guidelines may disqualify the Proposer’s response.

Sincerely,

Joseph Thomas, CPSM, C.P.M.  
Director of Purchasing

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## **I. About this Document**

This document is a Request for Proposal. It differs from a Request for Bid or Quotation in that the county is seeking a solution, as described on the cover page and in the following Background Information section, not a bid or quotation meeting firm specifications for the lowest price. As such, the lowest price proposed will not guarantee an award recommendation. As defined in Charter Resolution No. 68, Competitive Sealed Proposals will be evaluated based upon criteria formulated around the most important features of the product(s) and/or service(s), of which quality, testing, references, service, availability or capability, may be overriding factors, and price may not be determinative in the issuance of a contract or award. The proposal evaluation criteria should be viewed as standards that measure how well a vendor's approach meets the desired requirements and needs of the county. Criteria that will be used and considered in evaluation for award are set forth in this document. The county will thoroughly review all proposals received. The county will also utilize its best judgment when determining whether to schedule a pre-proposal conference, before proposals are accepted, or meetings with vendors, after receipt of all proposals. A Purchase Order/Contract will be awarded to a qualified vendor submitting the best proposal. **Sedgwick County reserves the right to select, and subsequently recommend for award, the proposed service(s) and/or product(s) which best meets its required needs, quality levels and budget constraints.**

The nature of this work is for a public entity and will require the expenditure of public funds and/or use of public facilities, therefore the successful proposer will understand that portions (potentially all) of their proposal may become public record at any time after receipt of proposals. Proposal responses, purchase orders and final contracts are subject to public disclosure after award. All confidential or proprietary information should be clearly denoted in proposal responses and responders should understand this information will be considered prior to release, however no guarantee is made that information will be withheld from public view.

## **II. Background**

Sedgwick County, located in south-central Kansas, is one of the most populous of Kansas' 105 counties with a population estimated at more than 508,000 persons. It is the sixteenth largest in area, with 1,008 square miles, and reportedly has the second highest per capita wealth among Kansas' counties. Organizationally, the county is a Commission/Manager entity, employs nearly 2,800 persons, and hosts or provides a full range of municipal services, e.g. – public safety, public works, criminal justice, recreation, entertainment, cultural, human/social, and education.

Sedgwick County EMS fleet consists of twenty-six (26) total ambulances. During 2017, SCEMS we will have between with thirteen (13) to twenty-one (21) ambulances on the street at any given time and five (5) ambulances to be used as backup vehicles. These backup vehicles are used during scheduled maintenance, unplanned downtime or in the event we need to deploy additional ambulances. Ten years ago, the county started a program in which the ambulance modules were remounted onto new chassis' in lieu purchasing new ambulances. This program has been very successful and has resulted in considerable cost savings to the taxpayer. It is the intent of the county to continue this practice. In the future, the modules on these five (5) ambulances will be placed into the remount program. The purchase of these five (5) ambulances will be used in replacing our aging fleet of front line ambulances or assist in bolstering our backup ambulances. This will allow the county to continue its schedule of remounting the current ambulance fleet.

The county would also like to establish contract pricing from these specifications through 2017 with two (2) more yearly options. It is the county's intent to only purchase five (5) ambulances through this contract, but would like to leave the option open for 2018 and 2019 in the event any more ambulances would need to be purchased under these specifications.

### III. Project Objectives

Sedgwick County, Kansas (hereinafter referred to as “county”) is seeking a firm or firms to provide five (5) 2017 Ford E450 Super-duty, RV cutaway chassis 158” wheelbase with an “Ambulance 47A Prep Package” per the specifications found in Attachment A. The following objectives have been identified for this contract:

1. Acquire products and services meeting the parameters, conditions and mandatory requirements presented in the document.
2. Establish contract pricing with the vendor that has the best proven “track-record” in performance, service and customer satisfaction.
3. Acquire products and services with the most advantageous overall cost to the county.

### IV. Submittals

Carefully review this Request for Proposal. It provides specific technical information necessary to aid participating firms in formulating a thorough response. Should you elect to participate, submit one (1) original **AND** one (1) electronic copy (PDF/Word supplied on a flash drive) of the entire document with any supplementary materials to:

Joe Thomas  
Sedgwick County Division of Purchasing  
525 N. Main, Suite 823  
Wichita, KS 67203

SUBMITTALS are due **NO LATER THAN 1:45 p.m. CDT, TUESDAY, June 20, 2017**. Responses must be sealed and marked on the lower left-hand corner with the firm name and address, proposal number, and proposal due date. Late or incomplete responses will not be accepted and will not receive consideration for final award.

Proposal responses will be acknowledged and read into record at bid opening which will occur at 2:00 p.m. CDT, on the due date. No information other than the respondent’s name will be disclosed at bid opening.

### V. Scope of Work

The specifications outlined in this document are intended to serve as minimum specifications needed for future remounts of the box. Vendors responding to this document should meet or exceed the specifications outlined. Any exceptions to the specifications should be clearly identified and detailed in vendor’s response.

Specifications and requirements which will result in the purchase of these vehicles are noted in “**Sedgwick County EMS and Fleet Management 2017 Ambulance Specifications**” (Attachment A) of this document.

All proposing vendors may be required to provide a similar model and configuration emergency vehicle for review by county representatives after submitting a response to this Request for Proposal. We understand that the vendor will not be able to provide the exact model that they have proposed but we do expect a model that is as close to our specifications as possible.

### VI. Sedgwick County’s Responsibility

- Provide information, as legally allowed, in possession of the county, which relates to the County’s requirements or which is relevant to this project.
- Designate a person to act as the County Contract Manager with respect to the work to be performed under this contract.
- Conduct final inspection and approve payment.

### VII. Proposal Terms

#### A. Questions and Contact Information

Any questions regarding this document must be submitted in writing to Joe Thomas at [joseph.thomas@sedgwick.gov](mailto:joseph.thomas@sedgwick.gov) by 5:00 p.m. CDT Friday, May 26, 2017. Any questions of a substantive nature will be answered in written form as an addendum and posted on the purchasing website at [www.sedgwickcounty.org/finance/purchasing.asp](http://www.sedgwickcounty.org/finance/purchasing.asp), under view current RFQs and RFPs; to the right of the RFP number by 5:00 p.m. CDT Friday, June 2, 2017. Firms are responsible for checking the website and acknowledging any addenda on their proposal response form.

B. Minimum Qualifications

This section lists the criteria to be considered in evaluating the ability of firms interested in providing the service(s) and/or product(s) specified in this Request for Proposal. Firms must meet or exceed these qualifications to be considered for award. Any exceptions to the requirements listed should be clearly detailed in proposer’s response. Proposers shall:

1. Have a minimum of 10 years of experience in providing products and/or services similar to those specified in this RFP.
2. Provide four (4) references for products and services provided in the past three (3) years.
3. Have supplied products for governmental entities or commercial customers of similar size and complexity.
4. Provide detailed information on all of Ford’s manufacturer’s warranties and such warranties will transfer ownership to Sedgwick County.
5. Have the capacity to acquire all bonds, escrows or insurances as outlined in the terms of this RFP.
6. Be able to provide product, services, parts and manuals.
7. Have knowledge of and comply with all currently applicable, and as they become enacted during the contract term, federal, state and local laws, statutes, ordinances, rules and regulations. All laws of the State of Kansas, whether substantive or procedural, shall apply to the contract, and all statutory, charter, and ordinance provisions that are applicable to public contracts in the county shall be followed with respect to the contract.

C. Evaluation Criteria

The selection process will be based on the responses to this RFP. County staff will judge each response as determined by the scoring criteria below. Purchasing staff are not a part of the evaluation committee.

Component	Points
a. Meeting or exceeding all solicitation conditions and instructions as outlined herein to include clarity, completeness, and comprehensiveness of the response.	20
b. Ability to meet or exceed all requirements and scope of work.	20
c. Quality, performance, warranty, and lifecycle cost of product proposed.	20
d. Relevant experience and knowledge in providing similar products.	20
e. Proposing products and services described herein with the most advantageous and prudent methodology, costs, and schedule as determined by the county.	20
<b>Total Points</b>	<b>100</b>

Any final negotiations for services, terms and conditions will be based, in part, on the firm’s method of providing the service and the fee schedule achieved through discussions and agreement with the county’s review committee. The county is under no obligation to accept the lowest priced proposal and reserves the right to further negotiate services and costs that are proposed. The county also reserves the sole right to recommend for award the proposal and plan that it deems to be in its best interest.

The county reserves the right to reject all proposals. All proposals, including supporting documentation shall become the property of Sedgwick County. All costs incurred in the preparation of this proposal shall be the responsibility of the firm making the proposals. Sedgwick County reserves the right to select, and subsequently recommend for award, the proposed service which best meets its required needs, quality levels and budget constraints.

D. [Request for Proposal Timeline](#)

The following dates are provided for informational purposes and are subject to change without notice. Contact the Division of Purchasing at (316) 660-7255 to confirm any and all dates.

Distribution of Request for Proposal to interested parties	<b>May 15, 2017</b>
Questions and clarifications submitted in writing by 5:00 p.m. CDT	<b>May 26, 2017</b>
Addendum Issued	<b>June 2, 2017</b>
Sealed Proposal due before 1:45pm CDT	<b>June 20, 2017</b>
Evaluation Period	<b>June 20-30, 2017</b>
Board of Bids and Contracts Recommendation	<b>July 6, 2017</b>
Board of County Commission Award	<b>July 12, 2017</b>

E. [Contract Period and Payment Terms](#)

A contractual period will begin following Board of County Commissioners (BoCC) approval of the successful firm(s) and continue for a period of one (1) year with two (2) one (1) year options to renew.

Either party may cancel its obligations herein upon thirty-day (30) prior written notice to the other party. It is understood that funding may cease or be reduced at any time, and in the event that adequate funds are not available to meet the obligations hereunder, either party reserves the right to terminate this agreement upon thirty (30) days prior written notice to the other. Payment will be remitted following receipt of monthly detailed invoice.

Payment and Invoice Provisions

[http://www.sedgwickcounty.org/purchasing/payment\\_and\\_invoice\\_provisions.pdf](http://www.sedgwickcounty.org/purchasing/payment_and_invoice_provisions.pdf)

F. [Insurance Requirements](#)

Liability insurance coverage indicated below must be considered as primary and not as excess insurance. Contractor shall furnish a certificate evidencing such coverage, with county listed as an additional insured, except for professional liability, workers' compensation and employer's liability. **Certificate shall be provided prior to award of contract.** Certificate shall remain in force during the duration of the project/services and will not be canceled, reduced, modified, limited, or restricted until thirty (30) days after county receives written notice of such change. All insurance must be with an insurance company with a minimum BEST rating of A-VIII and licensed to do business in the State of Kansas (**must be acknowledged on the bid/proposal response form**).

**NOTE:** If any insurance is subject to a deductible or self-insured retention, written disclosure must be included in your proposal response and also be noted on the certificate of insurance.

It is the responsibility of Contractor to require that any and all approved subcontractors meet the minimum insurance requirements. Contractor shall obtain the above referenced certificate(s) of insurance, and in accordance with this Agreement, provide copies of such certificates to county.

**Workers' Compensation:**

Applicable coverage per State Statutes

**Employer's Liability Insurance:** \$100,000.00

**Commercial General Liability Insurance:**

Each Occurrence \$500,000.00

Aggregate \$500,000.00

**Personal Injury:**

Each Occurrence \$500,000.00

General Aggregate \$500,000.00

**Automobile Liability:**

Combined single limit \$500,000.00

**Professional Liability**

**If required**

*Special Risks or Circumstances:*

*Entity reserves the right to modify these requirements, including limits, based on the nature of the risk, prior experience, insurer, coverage, or other special circumstances.*

G. Indemnification

To the fullest extent of the law, the provider, its subcontractor, agents, servants, officers or employees shall indemnify and hold harmless Sedgwick County, including, but not limited to, its elected and appointed officials, officers, employees and agents, from any and all claims brought by any person or entity whatsoever, arising from any act, error, or omission of the provider during the provider's performance of the agreement or any other agreements of the provider entered into by reason thereof. The provider shall indemnify and defend Sedgwick County, including, but not limited to, its elected and appointed officials, officers, employees and agents, with respect to any claim arising, or alleged to have arisen from negligence, and/or willful, wanton or reckless acts or omissions of the provider, its subcontractor, agents, servants, officers, or employees and any and all losses or liabilities resulting from any such claims, including, but not limited to, damage awards, costs and reasonable attorney's fees. This indemnification shall not be affected by any other portions of the agreement relating to insurance requirements. The provider agrees that it will procure and keep in force at all times at its own expense insurance in accordance with these specifications.

H. Confidential Matters and Data Ownership

The successful proposer agrees all data, records and information, which the proposer, its agents and employees, which is the subject of this proposal, obtain access, remains at all times exclusively the property of Sedgwick County. The successful proposer agrees all such data, records, plans and information constitutes at all times proprietary information of Sedgwick County. The successful proposer agrees that it will not disclose, provide, or make available any of such proprietary information in any form to any person or entity. In addition, the successful proposer agrees it will not use any names or addresses contained in such data, records, plans and information for the purpose of selling or offering for sale any property or service to any person or entity who resides at any address in such data. In addition, the successful proposer agrees it will not sell, give or otherwise make available to any person or entity any names or addresses contained in or derived from such data, records and information for the purpose of allowing such person to sell or offer for sale any property or service to any person or entity named in such data. Successful proposer agrees it will take all reasonable steps and the same protective precautions to protect Sedgwick County's proprietary information from disclosure to third parties as with successful proposer's own proprietary and confidential information. Proposer agrees that all data, regardless of form that is generated as a result of this Request for Proposal is the property of Sedgwick County.

I. [Proposal Conditions](#)

[http://www.sedgwickcounty.org/purchasing/pdf\\_files/Proposal%20Terms%20%20Conditions.pdf](http://www.sedgwickcounty.org/purchasing/pdf_files/Proposal%20Terms%20%20Conditions.pdf)

General Contract Provisions

[http://www.sedgwickcounty.org/purchasing/pdf\\_files/General%20Contractual%20Provisions.pdf](http://www.sedgwickcounty.org/purchasing/pdf_files/General%20Contractual%20Provisions.pdf)

Mandatory Contract Provisions

[http://www.sedgwickcounty.org/purchasing/pdf\\_files/Mandatory%20Contractual%20Provisions.pdf](http://www.sedgwickcounty.org/purchasing/pdf_files/Mandatory%20Contractual%20Provisions.pdf)

Sample Contract

[http://www.sedgwickcounty.org/purchasing/pdf\\_files/Sample%20Contract.pdf](http://www.sedgwickcounty.org/purchasing/pdf_files/Sample%20Contract.pdf)

**VIII. [Required Response Content](#)**

All proposal submissions shall include the following:

1. Firm profile: the name of the firm, address, telephone number(s), contact person, year the firm was established, and the names of the principals of the firm.
2. The names of the staff members who will be available for work on the contract, including a listing of their work experience.
3. The firm's relevant experience, notably experience working with government agencies.
4. Provide a list of four (4) past or current client references; include organization, address, date of services, scope of products/services, name of contact with e-mail addresses and telephone numbers where work has been completed within the last three years.
5. Clearly address in sequential order each of the minimum qualifications found in **Section VII Proposal Terms – B. Minimum Qualifications**.
6. Clearly address in sequential order each of the minimum requirements and specifications listed in **Attachment A (“Sedgwick County EMS and Fleet Management 2017 Ambulance Specifications”)**.
7. A disclosure of any real or potential conflicts of interest with members of the Sedgwick County Board of County Commissioners or county staff.
8. A description of the type of assistance that will be sought from county staff, including assistance required from the county to lessen the costs of this project.
9. Proof of insurance meeting minimum insurance requirements as designated herein.



**IX. Response Form**

**REQUEST FOR PROPOSAL  
#17-0055  
AMBULANCES**

The undersigned, on behalf of the proposer, certifies that: (1) this offer is made without previous understanding, agreement or connection with any person, firm, or corporation submitting a proposal on the same project; (2) is in all respects fair and without collusion or fraud; (3) the person whose signature appears below is legally empowered to bind the firm in whose name the proposer is entered; (4) they have read the complete Request for Proposal and understands all provisions; (5) if accepted by the county, this proposal is guaranteed as written and amended and will be implemented as stated; and (6) mistakes in writing of the submitted proposal will be their responsibility.

NAME \_\_\_\_\_

DBA/SAME \_\_\_\_\_

CONTACT \_\_\_\_\_

ADDRESS \_\_\_\_\_ CITY/STATE \_\_\_\_\_ ZIP \_\_\_\_\_

PHONE \_\_\_\_\_ FAX \_\_\_\_\_ HOURS \_\_\_\_\_

STATE OF INCORPORATION or ORGANIZATION \_\_\_\_\_ COMPANY WEBSITE \_\_\_\_\_

ADDRESS \_\_\_\_\_ EMAIL \_\_\_\_\_

NUMBER OF LOCATIONS \_\_\_\_\_ NUMBER OF PERSONS EMPLOYED \_\_\_\_\_

TYPE OF ORGANIZATION: Public Corporation \_\_\_\_\_ Private Corporation \_\_\_\_\_ Sole Proprietorship \_\_\_\_\_

Partnership \_\_\_\_\_ Other (Describe): \_\_\_\_\_

BUSINESS MODEL: Small Business \_\_\_\_\_ Manufacturer \_\_\_\_\_ Distributor \_\_\_\_\_ Retail \_\_\_\_\_

Dealer \_\_\_\_\_ Other (Describe): \_\_\_\_\_

Not a Minority-Owned Business: \_\_\_\_\_ Minority-Owned Business: \_\_\_\_\_ (Specify Below)

\_\_ African American (05) \_\_ Asian Pacific (10) \_\_ Subcontinent Asian (15) \_\_ Hispanic (20)

\_\_ Native American (25) \_\_ Other (30) - Please specify \_\_\_\_\_

Not a Woman-Owned Business: \_\_\_\_\_ Woman-Owned Business: \_\_\_\_\_ (Specify Below)

\_\_ Not Minority -Woman Owned (50) \_\_ African American-Woman Owned (55)

\_\_ Asian Pacific-Woman Owned (60) \_\_ Subcontinent Asian-Woman Owned (65) \_\_ Hispanic Woman Owned (70)

\_\_ Native American-Woman Owned (75) \_\_ Other – Woman Owned (80) – Please specify \_\_\_\_\_

ARE YOU REGISTERED TO DO BUSINESS IN THE STATE OF KS: \_\_\_\_\_ Yes \_\_\_\_\_ No

INSURANCE REGISTERED IN THE STATE OF KS WITH MINIMUM BEST RATING OF A-VIII: \_\_\_\_\_ Yes \_\_\_\_\_ No

**ACKNOWLEDGE RECEIPT OF ADDENDA:** All addendum(s) are posted to our RFQ/RFP web page and it is the vendor's responsibility to check and confirm all addendum(s) related to this document by going to [www.sedgwickcounty.org/finance/purchasing.asp](http://www.sedgwickcounty.org/finance/purchasing.asp) .

NO. \_\_\_\_\_, DATED \_\_\_\_\_; NO. \_\_\_\_\_, DATED \_\_\_\_\_; NO. \_\_\_\_\_, DATED \_\_\_\_\_

In submitting a proposal, vendor acknowledges all requirements, terms, conditions, and sections of this document. Proposal submission format should be by order in which sections are listed throughout the document. All minimum and general requirements should be specifically addressed and detailed in proposer's response. **Exceptions to any part of this document should be clearly delineated and detailed.**

Signature \_\_\_\_\_ Title \_\_\_\_\_

Print Name \_\_\_\_\_ Dated \_\_\_\_\_

# Sedgwick County Kansas

Emergency Medical Service

and

Fleet Management

## 2017 Ambulance Specifications



Last update April 28, 2017

Sedgwick County EMS

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## **1. PURPOSE AND CLASSIFICATION**

### **1.1.2 INTENT**

It is the intent of the Sedgwick County Emergency Medical Service, hereafter called "County" to provide vehicle specifications that will result in the procurement of the highest quality vehicle possible to meet the requirements and needs of field personnel and the citizens they serve.

### **1.1.3 VEHICLE FOR REVIEW**

All proposing Proposers may be required to provide a like model and configuration emergency vehicle for review by County representatives after submitting a response to this Request for Proposal.

### **1.1.4 PRICING**

Contract pricing shall remain firm through the 2017-2018 model year. Two (2) – one year options to renew may be exercised for the option's current year model. The County estimates between 2-5 ambulances purchased for each optional year.

### **1.2.1 VEHICLE TYPE AND CONFIGURATION**

The attached specification defines a heavy-duty, commercial emergency medical vehicle, as a Type III Ambulance, prepared with a cutaway van chassis with a re-mountable ambulance body - Class I, Dual Rear Wheel, Configuration A, elevating cot with curb side attendants seat for ALS. A 172" x 96", Type III box shall be provided.

## **2. APPLICABLE DOCUMENTS**

### **2.1 CONFLICTS**

In the event of a conflict between the text of this specification and references cited herein, the text of this specification shall take precedence.

## **3. REQUIREMENTS**

Ambulances shall be built to withstand adverse driving conditions. Vehicles must meet or exceed the latest revision of Federal Specifications KKK-A-1822F as amended, Federal Motor Vehicle Safety Standards (F.M.V.S.S.), National Truck Equipment Association (N.T.E.A.) Ambulance Manufacturer's Division (A.M.D.) standards and Ford Qualified Vehicle Modifier (Q.V.M.) Program Truck Guidelines for Vehicle Modifiers.

### **3.1 GENERAL VEHICLE DESIGN, MATERIALS**

#### **3.1.1 DESIGN**

##### **A. MANUFACTURING REQUIREMENT**

The design intent of the specifications supplied herein is to purchase an ambulance with the highest level of engineering excellence. The intent of this vehicle shall be centered on the patient's need for pre-hospital care, in conjunction with a safe working environment for the Emergency Medical Personnel. The ambulance and allied equipment furnished under this specification shall be new and manufacturers' current commercial vehicle of the type and class specified. In order to insure continuity of quality and warranty, the ambulance manufacturer must be the conversion fabricator of the ambulance module. If the ambulance manufacturer does not construct its own ambulance module structure (framework and aluminum skin), the manufacture must provide documentation of their partnership or



contract with the manufacturer of the module body structure. Job shop type operations that simply add components to a pre-fabricated or purchased body are not in compliance with these specifications.

**B. DEPARTMENTAL NEEDS DESIGN**

This is an engineer, design, construct, and deliver type specification and it is not the intention of the County to write out Proposers or manufacturers of similar or equal equipment of the types specified. It should be noted, however, that this specification is written around the specific needs of this department. The intent is to standardize certain components; specific brands have been specified in certain places. This has been done to establish a certain standard of quality. Other brands will be accepted providing the Proposer or manufacturer details how another brand will meet or exceed the quality of the actual brand specified. Because of this, the Review Committee reserves the right to accept or reject any and/or all bids.

**C. TIME IN BUSINESS AND QUANTITY BUILT**

All Proposers shall submit with their proposal a certified statement stating the length of time they have been constructing new modular ambulances. If the manufacturer has constructed less than 300 Type III modular ambulances per year, they must state so in the certified statement. The County reserves the right to require any verification deemed appropriate to insure the Proposers' qualification to construct the ambulance specified herein.

**D. RELIABLE OPERATION CRITERIA**

The ambulance shall be complete with the operating accessories as specified herein; furnished with such modifications and attachments as may be necessary to enable the vehicle to function reliably and efficiently in sustained operation. The design of the vehicle and the specified equipment shall permit accessibility for servicing, replacement, and adjustment of component parts and accessories with minimum disturbance to other components and systems. The term "HEAVY DUTY" as used to describe an item shall mean in excess of the usual quantity, quality, or capacity that is normally supplied with the standard production vehicle or component.

**E. SERVICABILITY**

The proposed vehicle and specified equipment shall permit accessibility for servicing, replacement and adjustment of component parts and accessories with minimum disturbance to other components and systems.

**F. ENGINEERING CAPABILITIES**

To demonstrate Proposer's abilities and to show understanding of the written bid specifications, each manufacturer must submit with their proposal, scale drawings along with three dimensional (3-D) drawings of the vehicle it proposes to supply. Drawings must be "design and construct" drawings that will be used in the manufacture of the vehicle. They must show overall dimensions, compartment sizes, cabinet dimensions, lighting package, and major specified options. The drawings must show the front, rear, right side, and the left side of the exterior. They should also include the interior bulkhead, streetside, curbside cabinet plans and the interior floor plan layout. The reproduction of the drawings furnished with the bid will not be acceptable as each manufacturer uses different material sizes and construction techniques. The Proposer must have on-site engineering staff and shall furnish a list of with their educational credentials. Additionally, the Proposer shall list any other company engineering staff support that is available corporate wide.

**G. CRASH WORTHINESS**

In addition to compliance with design criteria incorporated herein, manufacturer shall also provide certified documentation to provide proof of crash worthiness of vehicle(s) proposed. Crash worthiness of vehicle shall be demonstrated through actual crash tests of modular body ambulance under

laboratory conditions. These crash tests will be similar in scope to testing performed by the National Highway Traffic Safety Administration and the Insurance Institute for Automobile Safety to verify the crash worthiness of passenger vehicles. An independent test laboratory accepted and utilized by the National Highway Traffic Safety Administration for their crash tests shall perform this testing and provide certification. Testing shall be performed and verified by SAE Member Engineers.

Test criteria shall be defined as a minimum of two (2) actual high-speed impact crash tests between an ambulance and mid-size passenger vehicles. Collisions shall be performed into each side of manufacturer's standard production modular ambulance body mounted on a chassis, struck by an actual vehicle. Crash energy at impact shall be a minimum of 3,000 pounds at 40 miles per hour.

Reports from crash testing shall be certified by testing lab, and shall include the following minimum results:

- The required six-point medic restraint system shall hold all attendants in their seats. There shall be no head contact with anything except head rests. There shall be no excessive excursion of the attendants in their seats regardless of which way they were facing.
- All interior cabinetry and fixtures shall remain in place and undamaged.
- The ambulance body structure shall remain intact after both impacts. Bending of body shall be localized to point of impact, and doors adjacent to the actual crash point shall continue to operate. There shall be no intrusion into the patient compartment.
- The body mount and pucks shall remain intact as a result of the impacts. There shall be no visual damage to body mounts or floor structure.

This provision requires actual crash testing of an ambulance by high-speed moving vehicles to validate safety and crash worthiness. Crash simulations, acceleration testing, sled testing; barrier testing or other theoretical tests are not sufficient to meet this requirement. Certified documentation from a qualified independent testing laboratory shall be provided with the bid in order to validate compliance with this requirement.

#### **H. DIAGRAMS AND SCHEMATICS**

Complete, legible wiring diagrams and schematics, including identification codes and parts lists for the ambulances standard and optional equipment furnished shall be included on CD-ROM in Adobe PDF format in the service manual and be supplied with each ambulance. In addition to the basic wiring diagram(s) and schematic(s) of the electrical system, a separate wiring diagram shall be furnished on individual sheets for each and every circuit (except OEM chassis wiring) from the electrical distribution center to its point of termination. All wiring diagrams and/or schematics shall be for this specified ambulance. General diagrams that do not reflect the actual unit, system, options and components shall not be acceptable. Proposers are required to submit a complete set of diagrams and schematics with their proposal to allow the County the opportunity to evaluate their system. These drawings shall be for the exact vehicle proposed and not a sample set. At minimum, these drawings and schematics shall include wire bundle locations, wire ID and color codes, location of splices and connectors, and tie-ins to the OEM system.

#### **I. KANSAS DEALER LICENSE**

The proposer shall include in their proposal a photocopy of the dealer's State of Kansas Dealer's license to validate the dealer's ability to provide vehicles in the State of Kansas. This shall not be the manufacturer's license unless the manufacturer is the direct dealer.

#### **J. CERTIFICATIONS & CONSTRUCTION REQUIREMENTS**

The Proposer shall provide the following documentation. Documents showing they are a Ford Qualified

Vehicle Modifier (Q.V.M.). Proposer must be a member in good standing with the National Truck Equipment Association (NTEA). Proposer must also have a Star-Of-Life Ambulance Component Certification. The Proposer shall also provide all welding certifications on all employees who are constructing the module.

### **3.3 RECOVERABLE MATERIALS**

All equipment, material and articles requested under this specification are to be new or fabricated from new materials. The use of used, re-manufactured or rebuilt products is not allowed under this specification.

### **3.4 OPERATING PERFORMANCE AND PHYSICAL CHARACTERISTICS**

#### **3.4.1 OPERATION AND PERFORMANCE**

All requirement in KKK-1822F in section 3.4 shall be met unless they are specifically referenced in this document.

### **3.5 VEHICLE WEIGHT RATINGS AND PAYLOAD**

#### **3.5.2 PAYLOAD ALLOWANCE**

Each vehicle's payload allowance shall be determined and displayed in accordance with the weight/payload certification form (sticker) as specified in KKK-A-1822F. Stickers are to be located in a conspicuous location in the vehicle. Payload shall be over and above the specified curb weight of the vehicle and include specified options, miscellaneous medical equipment and communications equipment. The usable payload for the ambulance built shall be no less than 2,000 pounds.

### **3.6 CHASSIS, POWER UNIT, AND COMPONENTS**

#### **3.6.1 CHASSIS-FRAME**

The ambulance shall be a Class 1, Configuration A, 2-door cut-a-way van chassis with a transferable, modular, ambulance body. The chassis will be current model year Ford E450 Super-duty Deluxe, RV cutaway chassis 158" wheelbase with an Ambulance 47A Prep Package. The GVW shall be at a minimum of 14,500 pounds.

#### **3.6.3.3 ENGINE**

Shall be equipped with a minimum of a 6.8 Liter, Triton V-10 gasoline engine. The OEM engine block heater shall not be connected to the 125VAC system of the conversion or module.

#### **3.6.3.4 ALTERNATOR - CHARGING SYSTEM**

Ford's option No 63N single alternator option shall be supplied and installed by the O.E.M. The single alternator shall have an output of 225 amperes, measured with an under hood temperature of 200 degrees Fahrenheit. The alternator shall be controlled by the vehicles on board computer. The alternators' output cable, originally connected directly to the positive post of the under hood battery, shall be rerouted to a 3/8" diameter, solid brass junction post. A 2/O positive battery cable shall reconnect the alternator to the batteries from the junction post in the battery compartment. The ambulance load cable shall connect under the hood to the aforementioned junction post.

#### **3.6.3.5 BATTERY – FORD OEM**

The battery that is inside the engine compartment shall be a ML-BXT-65-750 Ford OEM Battery. A 2/O

positive and negative battery cables shall connect to the OEM battery with the two onboard batteries in the external battery compartment. These batteries shall be connected in parallel.

**3.6.5.1 REAR DIFFERENTIAL**

Shall be OEM 4:56 ratio with limited slip in a dual rear wheel configuration.

**3.6.5.2 AUTOMATIC TRANSMISSION**

Shall be a TorqShift HD 6 speed automatic transmission with two overdrive ratios. Tow/Haul Mode, SelectShift and standard auxiliary external oil cooler.

**3.6.5.3 SUSPENSION**

The ambulance front suspension shall be equipped with a matched set of springs as provided in Ford's Ambulance Prep Package. The manufacturer shall add a Liquid Spring Rear Axle Suspension System for a Ford E450 Chassis, model number DS96F-A. An OEM supplied front and rear stabilizer bar shall be provided to assist vehicle stability.

**3.6.6 STEERING**

Shall be OEM power assisted, tilt steering wheel. There shall also be installed a Ford oil inner-cooler if not supplied as original equipment by the chassis manufacturer.

**3.6.7 WHEELS**

Standard wheels furnished by OEM only, vehicle shall have dual rear wheels.

**3.6.8 TIRES**

Shall be of the appropriate size and load range for GVWR of the vehicle as supplied by Ford Motor Company. One inflated spare tire/wheel assembly identical to those of the vehicle shall be furnished and shipped loose in the vehicle.

**3.6.11 WHEEL SIMULATORS**

Wheels on vehicle shall be fitted with bolt on Phoenix brand polished stainless steel, E-series wheel simulators. These shall be light duty DOT liners with lug nut extenders and VHSL air fill tubes. Simulators shall be installed over the lugs and held on with lug nuts and caps.

**3.6.12 TIRE VALVE EXTENDERS**

Two pair of tire valve extenders shall be supplied and installed; one extender for each of the rear wheels. The tire valve extenders shall permit the user to check tire pressure and fill the inside rear tires without removing the outer tire. The extenders shall have a braided stainless steel outer jacket to resist abrasions and cuts. The filler end shall be supported by a valve bracket.

**3.6.13 HOSES**

All radiator and heater hoses shall be high temperature EDPM Nomex as supplied by the chassis manufacturer. Any added hoses by the vehicle modifier shall also be EDPM Nomex, properly supported and grommeted to prevent sagging, chaffing and unnecessary movement that could cause damage.

## **3.7 ELECTRICAL SYSTEM AND COMPONENTS**

### **3.7.1 ELECTRICAL SYSTEM**

#### **A. REQUIRED EQUIPMENT**

The ambulance electrical system shall be equipped with, but not limited to the following: three (3) identical 12 volt batteries, battery conditioner, shore power equipment charging, generating, starting, protection systems, lighting, ignition, visual and audible warning systems, specified electronic equipment and devices including; the multiplex control system, and control panels located in the cab and patient compartment and other specified accessory wiring.

#### **B. GENERAL GUIDELINES**

The electrical systems and equipment shall comply with all applicable Federal and SAE standards, recommendations and practices whether or not specifically referenced in this document. All electrical components shall be selected to minimize electrical loads thereby not exceeding the vehicle's generating capacity. All electric circuits shall be protected against shorts and overloads. All electrical components and wiring shall be readily accessible through access panels for inspection and maintenance. All switches, indicators and controls shall be located and installed in a manner that facilitates easy use and removal and servicing. All exposed exterior lamp housing and fixtures shall be corrosion resistant and weather proof.

##### **1. GENERAL SYSTEM**

The electrical and multiplex system must be capable of remaining active for a minimum of fifteen minutes after the ignition switch has been turned off; for the purpose of cleaning, restocking and plugging in the shore line after an emergency call. After this fifteen minute delay has expired, the timed battery switch, controlled by the multiplex system, shall shut down the electrical system to preserve battery life on the vehicle.

All ground leads from any device shall be grounded directly, with no intermediate splices, back to the main ground cable or steel frame using J-posts and bolt fasteners with spring lock washers and would prefer a concave/convex washer.

##### **2. SYSTEM OUTPUTS**

The outputs shall perform all the following items without added modules to perform any of the tasks.

- a. Load Shedding: System shall have the capability to load shed with 8 levels any output. This means you can specify which outputs (barring KKK-A-1822-F restrictions) you would like Load Shed. Level 1 – 12.9v, Level 2 – 12.5V, Level 3 - 12.1V, Level 4 - 11.7V, Level 5 – 11.3V, Level 6 – 10.9V, Level 7 – 10.5, Level 8 – 10.1. Unlike conventional load shedding devices you can assign a level to any or all outputs.
- b. Load Sequencing: System shall be able to sequence from 0 – 8 levels any output. With 0 being no delay and 1 being a 1 second delay, 2 being a 2 second delay and so on. Sequencing reduces the amount of voltage spikes and drops on your vehicle, and can help limit damage to your charging system.
- c. Output Device: System shall have solid-state output devices. Each solid-state output shall be a MOS-FET (Metal Oxide Semiconductor - Field Effect Transistors); MOS-FET's are solid-state devices with no moving parts to wear out. A typical relay when loaded to spec has a life of

100,000 cycles. The life of a FET is more than 100 times that of a relay.

- d. Flashing Outputs: System shall be able to flash any output in either A or B phase, and logic is used to shut down needed outputs in park, or any one of several combined interlocks. The system shall be capable of flash rates from 75 to 1200 FPM, thus controlling any LED light.
- e. PWM: Modules shall have the ability to pulse width modulate (PWM) outputs. This feature is used to dim interior lights and run fans at varied speeds. Running your interior lights at a lower duty cycle and intensity will extend the life of the lamps.
- f. Diagnostics: An output should be able to detect either a short or open circuit. The system should be able report in real time a text based message that points the maintenance person to a specific output.

### **3. SYSTEM INPUTS**

- a. The inputs shall have the ability to signal the system by a ground, analog, digital, or battery voltage signals.
- b. The inputs shall be filtered for noise suppression via hardware and software so that radio frequency (RF) or dirty power will not trick an input into changing its status.
- c. This task will be handled with existing inputs and outputs. The multiplex system will monitor the voltage and turn the high idle on until the voltage set point is reached.

### **4. AUTOMATIC CLIMATE CONTROL**

The multiplex system shall have the capability to provide automatic climate control, this shall occur by the use of PWM outputs and a Digital readout that combines other vehicle functions as well. The climate control must be an integral part of the multiplex system.

### **5. DISPLAYS**

Both of the LX1 Class 1 multiplex control screen displays (2 each) shall be able to provide real time system control, information regarding system status, safety warnings, camera monitoring, load shedding, and diagnostic fault reporting and helps.

### **6. SPARE DISPLAY**

One (1) spare LX1 multiplex control screen of the same design and model for each different model and program used shall be provided to Sedgwick County as a replacement for a faulty or otherwise inoperable control screen in the ambulance. This will allow the ambulance to remain in service while a warranty repair is completed on the faulty or otherwise inoperable display. One set of spare multiplex control screens (per type) shall be provided to Sedgwick County for this contract.

## **C. MULTIPLEXING ELECTRICAL SYSTEM**

### **Class1 ES Key and UltraView Specifications Electrical System:**

The electrical system shall utilize Class1 Inc. **ES-Key™** technology, **UltraView™** displays and **1Touch (TM?)** switch modules, where applicable.

The apparatus shall be equipped with a Class 1 ES-Key Management System for controlling electrical system devices. This management system shall be capable of performing load management functions, system switching, monitoring and reporting, and be fully programmable for a standardized electrical system utilizing the ES-Key Professional software program.

The ES-Key system shall utilize a Controller Area Network (J1939) protocol to provide multiplexed control signals for "real time" operation. The system shall consist of a main control module (Universal System Manager or Supernode II) and the appropriate combination of Power Distribution Module(s) (PDM), Switch Input Module(s) (SIM), and other I/O modules as required for the application.

Optional system enhancements may include the UltraView™ 700 display, the UltraView 450 display and 1Touch switch modules for increased graphic user interface.

### **Supernode II™**

The apparatus shall be equipped with a Class1 ES-Key™ system with a Supernode II™ high density input output node. The Supernode II™ shall have (24) inputs, (24) outputs, a Universal System Manager, a data logger, programmable special utilities, and select J1939 engine and drive train message reception with ES-Key™ I/O association. It must be sealed to IP-67 and have integrated power connections.

The Supernode™ shall have (18) positive and (6) negative outputs. Each positive output shall be capable of 13 amps continuous duty. The negative outputs shall be capable of 2 amps continuous duty. Supernode II™ outputs shall contain features such as digital circuit breaker, flash capability, PWM capability and open load detection.

The Supernode II™ special utility functions shall include timers (delay on/off and one shot), counters, bi-stable switches, and select J1939 broadcast messages. The Supernode II™ shall have an integrated USB port to allow for direct connection to the ES-Key system without additional interface devices.

The Supernode II™ shall have an integrated Load Manager. The Load Manager Sequencer shall assure that loads are applied and removed gradually, thus eliminating the possibility of inducing failures in the vehicle's equipment.

The load manager shall be a precision, solid state controller which sequentially switches "ON" multiple circuits at 1/2 second intervals. Individual switches shall enable the user (Driver) to select output "ON" or "OFF" status, at any time. The sequencer shall be initiated by the "Emergency Master" switch. The sequencer priority shall be set at the apparatus pre-build conference.

The aforementioned Load Manager shall monitor the vehicles battery voltage. Loads may be shed at any voltage at one tenth of volt increments. A low voltage warning may be set at any set point (usually 11.5 volts). The load manager can shed any output that is controlled by the system (there is no limit to the number of loads that may be managed by the network).The load shed priority shall be set by the circuit significance, followed closely by circuit draw. The Load Manager shall shed loads until the voltage level begins to rise.

Voltage Monitor: A voltage monitor shall be built into the ES-Key electrical system. It shall activate a warning when the alternator output voltage falls below any desired voltage (usually 11.5 volts).

### **UltraView™ 700 Display**

The apparatus shall be equipped with the UltraView™ 700 display (UV700). The UV700 is a 7 inch, full color LCD display, with (14) buttons and touch screen capability with (2) J1939 CAN Bus connections and (3) NTSC/PAL video inputs. It shall be bonded for direct sunlight viewing, sealed to IP67 and mounted in either the flush, pedestal or rear-mount position.

The UV700's switches shall be configured to allow for the control of emergency master and non-

emergency master functions and are completely configurable via the ES-Key™ Professional software. Switches shall be set to act as momentary, maintained or three-way switches without any physical hardware change. All switches and or indicators may be configured as touch screen inputs into the ES-Key™ system. The (14) buttons are blue LED backlit.

There may be up to (4) UV700 displays on a vehicle.

### **UltraView™ 450 Display**

The apparatus shall be equipped with the UltraView™ 450 display (UV450). It is a custom programmed, 4.3 inch, full color LCD display with an (8) button, touch screen capable display. It shall be bonded for direct sunlight viewing. The UV450 is sealed to IP67 and allows for flush, pedestal or rear mounting options. The UV450 has (2) J1939 CAN Bus connections and (2) NTSC/PAL video inputs.

The UV450 switches are configured to allow for the control of emergency master and non-emergency master functions and are completely configurable via the ES-Key™ professional software. Switches may be set to act as momentary, maintained or 3 way switches without any physical hardware change. All switches and or indicators may be configured as touch screen inputs into the ES-Key™ system. The (8) buttons are LED backlit.

There may be up to (4) UV450 displays on a vehicle.

### **1Touch Switch Modules**

The apparatus shall be equipped with the appropriate quantity of 1Touch switch modules for enhanced device activation. The 1Touch switch modules shall be available in any combination of 4-button, 8-button, 12-button or 16-button configurations to accommodate specific apparatus requirements. Individual switches shall be backlit with multiple colored and textured switch caps and printable labels. Switch panels shall be sealed to IP67 and have dual LED indicators. Each switch position's back light may be individually controlled allowing for the specific switch position to be used as an indicator. Each switch pair can be configured to momentary, maintained, toggle or a dimmer. Panels can be included in network dimming.

#### **3.7.1.1 WARNING INDICATORS**

The multiplex system shall incorporate a warning lights and an alarm located in the front multiplex LX1 control screen. It shall provide warning lights and an audible beep indicating patient compartment door(s) are open and/or exterior compartment door(s) are open and operate when the vehicle is placed in a forward or reverse gear. The patient compartment door open warning indicator shall be red and flash when activated and cannot be overridden or silenced by the operator. The compartment door open warning light shall be amber and flash when activated. Audible beeper shall be set to be easily heard by the driver.

#### **3.7.2 WIRING INSTALLATION**

##### **A. SAE REQUIREMENTS**

The ambulance body and accessory electrical equipment shall be served by circuit(s) separate and distinct from vehicle chassis circuits. All wiring supplied by the ambulance manufacturer shall be copper and conform to all SAE J1292 requirements and shall have type SXL high temperature thermoplastic or better insulation conforming to SAE J1127 and J1128. The wiring shall be color coded as to basic function and



have specific descriptive function imprinted at intervals of 12" or less. Those manufacturers not using descriptive words but numerical codes must imprint them as above and furnish a detailed wiring diagram.

**B. GENERAL INSTALLATION**

Wiring shall be routed in conduit or high temperature looms with a rating of 300 degrees F. All added wiring shall be located in accessible, enclosed and protected locations and kept a minimum of 6" from exhaust system components. Electrical wiring and components shall not terminate in the oxygen compartment, except the compartment light, and magnetic switch device. Wiring necessarily passing through the oxygen compartment shall be routed in a conduit. All conduits, looms and wiring shall be secured to the body or frame with insulated metal cable straps in order to prevent sagging and movement that may result in damage. There shall be no harness wiring coming through the cab floor between the cab seats and directly behind the engine cover.

All apertures on the vehicle shall be properly grommeted for passing wiring and conform to SAE J1292. All items used for protecting or securing the wires shall be appropriate for the specific application and be standard automotive, aircraft, marine or electronic hardware.

**3.7.2.1 WIRING CRITERIA**

**A. SERVICE LOOP**

A 6" service loop of wire or harness shall be provided at all electrical components, terminals and connection points. All terminals shall be permanently identified and terminal strips or blocks shall be readily accessible for checking and service.

**B. MAIN HARNESS**

All main harness wiring installed by the ambulance manufacturer shall carry the maximum load ratings of the circuit it is designed to service. All cables larger than 18 AWG shall have the terminals mechanically crimped or soldered to insure minimal voltage drop.

**C. INSTALLATION AND PROTECTION**

Wires shall be grouped or harnessed where practical. Metal edges through which cables pass shall be protected with nonmetallic bushings or grommets. All auxiliary circuits shall be wired separate and distinct from the vehicle chassis circuits, color coded, and clearly numbered. All wiring shall be clipped or otherwise attached at suitable intervals to prevent rubbing or chafing due to wire movement, vibration, etc. All wiring must be stamped, color coded, labeled to indicate wire function, and conform to SAE 1292. Additionally, where main wire looms and harnesses travel over the top of the raw metal edges a rubber mat shall be secured to the metal edge to protect the wiring.

**D. WIRE RATING**

All wiring devices, outlets, etc. except circuit breakers and switches shall be rated to carry at least 125% of the maximum ampere load for which the circuit is protecting. All circuits in the panel shall be permanently labeled with circuit number and function. These labels shall match the wiring schematic included with the vehicle.

**E. CIRCUIT PROTECTION**

Circuit breakers, fuses, and relays shall be mounted securely to the inside of the electrical control center. This compartment shall have a door large enough for complete and unobstructed inspection and maintenance, and hinge out of the way for free movement. The control center shall be large enough to house all circuit breakers, relays, fuses, flashers, the medical isolator, and multiplex Nodes.

All auxiliary circuitry shall incorporate overload protection devices of automatic reset thermal breaker types and shall continuously carry 100% of the rated capacity for a minimum of one (1) hour. Bosch brand relays shall be used.

Design must be interchangeable with model styles from vehicle to vehicle without modification to wiring or compartment construction. All wires and connectors shall be of like resistance materials.

**F. 12 VOLT DC POWER**

For certain standard internal 12-volt DC power circuits there shall be circuit protection provided. This Isolator circuit includes a "low voltage" Schottky Diode to isolate medical equipment batteries from any electrical loads. The diode shall be located and electrically connected between a circuit breaker and the receptacles.

Additional breakers may be added for optional equipment such as power door locks, multiple radio installations or compressor pumps. Additional radio leads to J posts in radio compartment including; battery hot, ignition hot, timed switch/converter hot and ground; shall be provided.

**G. SEQUENCER**

The sequencer/load manager shall be integrated into the multiplexing system for the control of the main master emergency functions. The sequencer shall sequence ON or OFF all master emergency light functions at two (2) second intervals, which provides power surge protection. The load manager shall shed emergency functions when parked and a low voltage situation occurs. The department may specify the shedding sequence.

**H. MAIN HARNESS**

The main wiring harness for the module body shall be a master harness with circuits branching from it. There shall be no splices in this harness. Each circuit wire shall run from the distribution panel to the device without a break or connection.

**I. SPLICES**

Any splices or connections made in vehicle wiring that will be exposed to the external environment (under chassis or hood) shall be soldered and protected with heat shrink tubing or weather tight butt connectors. The use of open butt connectors or "Scotch-Lock" type fasteners is not acceptable. This will help ensure minimal voltage drop and secure connections.

**J. CONNECTIONS**

Any electrical connection exposed to the elements must have a weatherproof plug-in assembly. Circuit connectors shall be approved by the County. This shall be done at pre-construction meeting.

**K. CIRCUIT BREAKERS**

The ambulance electrical system shall incorporate a master circuit breaker panel with aircraft type manual or automatic resetting circuit breakers. Relays and/or solenoids shall be used on all switch circuits. All electrical and electronic components, switches, connectors, circuit breakers, lamps and indicators shall be marked with an easily identifiable code number, letter or word.

### **3.7.3 CIRCUIT GROUNDING**

- All ground leads, with the word “ground” printed on the insulation every 12”, from any device shall be grounded directly, with no intermediate splices, back to the main ground cable or steel frame using J-posts and bolt fasteners with spring lock washers and would prefer concave/convex washers.
- To provide RF grounding there shall be a minimum of four (4) ground straps between the chassis and body components of the ambulance. 4 AWG braided ground strap between the engine block and the chassis frame; a 2 AWG stranded copper ground strap between the body and chassis frame; a 2 AWG stranded copper ground strap between the battery box and the chassis frame; and a 2 AWG stranded copper ground strap between the cab floor and the chassis frame. Both ends of the straps shall be coated with dielectric sealer.
- Dedicated grounds for all appliances, circuits, etc. shall be furnished. The use of appliance mounting screws/hardware shall not be used for grounding purposes unless specifically designed for such use by the appliance manufacturer.

### **3.7.4 WINDSHIELD WIPERS AND WASHER**

The ambulance shall be equipped with OEM intermittent windshield wipers and washer.

### **3.7.5 HORNS**

The ambulance shall be equipped with OEM’s dual electric horns.

Air horns shall be installed through the plastic valance under the front bumper. The air horns shall be activated by the OEM horn ring when the Emergency Master is turned on.

### **3.7.6 LOW VOLTAGE ELECTRICAL SYSTEM**

The ambulance shall be equipped with a generating system rated at not less than 225 amperes at 14 volts with an under hood temperature of 200 degrees F. The alternators shall be as per Ford’s “Ambulance Prep Package”. Ambulance generating system shall meet AMD005 standard.

#### **3.7.6.1 ENGINE HIGH IDLE SPEED CONTROL, AUTOMATIC**

SEIC shall be provided in Ford’s Ambulance Prep Package through the OEM PCM. To boost battery power and HVAC operation the idle control shall be Fords QVM Q217. The Q217 shall be activated by the emergency brake engaged signal and be wired per Q217 with a fixed, not battery charge dependent, 1300 to 1500 engine high idle is dependent upon the following four conditions:

- Vehicle transmission in “PARK”.
- Vehicle emergency brake “ON”.
- Vehicle warmed up
- Brake and accelerator pedals not engaged.

#### **3.7.6.2 METERS (AMMETER, VOLTMETER, AND HOURMETER)**

The 12 volt electrical system shall incorporate a voltmeter, engine hour meter (if not included in OEM IP) and audible low voltage warning device. The volt meter and ammeter are to be incorporated into the LX1 control screens. The volt meter shall indicate the voltage of the batteries and the ammeter shall

sense the charging and or the discharging of the vehicle batteries. An audible low voltage-warning device shall be installed with a reset cancel switch. This device shall sound whenever the voltage of the vehicle drops below 11.8 volts. This device shall automatically reset once the batteries are above 11.8 volts. The engine hour meter shall be part of the OEM system and viewable on the dash.

### **3.7.7 BATTERY SYSTEM**

#### **A. BATTERIES**

Two identical 12 volt batteries shall be furnished. The batteries shall be located in the curbside middle compartment, between the rear wheels and the rear most curb side compartment (Spine Board). This compartment shall be sealed from the patient compartment at the lowest level possible. The batteries shall be Megatron Marine/RV deep cycle by Interstate Battery Company, P/N SRM29.

#### **B. BATTERY SECURITY**

Batteries shall be secured by a bracket, bolted to the battery tray base, and not impede access to the battery caps or terminals. Battery compartment shall be vented to the outside of the vehicle.

#### **C. JUMP STARTING CAPABILITY**

The jumpstart connection shall be by a Goodall Start All brand plug socket engine starter P/N 12-600 installed in the battery compartment. A jumpstart instruction placard shall be installed near the jumpers. Wording for this placard shall be as follows:

##### **JUMP START INSTRUCTIONS:**

1. TURN OFF 800 MHZ RADIO
2. DISCONNECT COMPUTERS FROM POWER
3. PLACE BLUE CONNECTOR INTO BLUE PLUG
4. PLACE RED JUMPER CLAMP ON (+) LUG OF SERVICE VEHICLE
5. PLACE BLACK JUMPER CLAMP ON CHASIS GROUND OR (-) LUG OF SERVICE VEHICLE

#### **D. BATTERY CABLE ROUTING**

The routing of battery cables shall be from the battery compartment to the console to the Cole Hersee switch and then to the Trombetta relay controlled by the Class 1 multiplex system and then to the module power distribution panel. The battery cables shall be fully protected by the high temperature loom and routed through rubber insulated metal cable clamps. The battery cables shall not be routed under chassis frame components.

#### **E. BATTERY SWITCH**

A five (5) minute timed battery switch shall be installed activated by the ignition switch and controlled by the multiplexing system. This will be pre-set to open the power circuit from the batteries to the main circuit board and interrupt power to all conversion functions after 5 minutes with chassis ignition OFF. The rear dome lights are also on a timed circuit to allow lighted check out time and will turn on automatically when either the curb side entry or rear entry doors are opened. An emergency shut down Cole Hersee type switch shall be mounted on the LH side of the cab console for driver access in case emergency shut down of the all conversion circuits is necessary.

### **3.7.7.1 AUTOMATIC BATTERY CHARGER/CONDITIONER, 12VDC POWER SUPPLY INVERTER**

The automatic charger/conditioner shall be the Vanner Lifestar Model 20-1050CUL-DC. The charger/conditioner shall be installed in the street side upper forward compartment. The charger/conditioner shall be connected to the chassis batteries directly to condition the chassis batteries for peak performance. The Vanner shall also power the 12VDC Portable Equipment Charging circuits separately from the chassis batteries. The Vanner shall be the 12VDC to 125VAC inverter as outlined in these specifications.

### **3.7.7.2 SEAMLESS STANDBY 12V POWER SUPPLY CIRCUIT**

These circuits shall prevent discharge or overcharge of chassis batteries while providing standby power. Stand by power keeps emergency equipment and supplies ready for use on the next call. These circuits shall receive power from the batteries when the vehicle is either running or receive power from the IOTA and the Vanner Life Star when the ambulance is connected to 125VAC 20amp shore power.

#### **A. On Board 12 VDC SEAMLESS LOW RIPPLE POWER**

The 12 VDC power portable equipment charging circuit shall be powered by the IOTA DLS-45 a 125VAC to 45A @ 12VDC converter. The IOTA shall be powered when connected to the 20A 125 VAC Kussmaul Super Auto Eject shore line plug in. A 75amp Schottky Diode shall be powered on the upstream terminal by the Timed Battery Switch and the downstream terminal connected to the output of the IOTA along with these more sensitive loads:

1. IV warmer.
2. Mermaid refrigerator.
3. Outlets: Action wall (1); aft end of squad bench (1); ALS cabinet (2).
4. Data Radio (radio compartment in M2 "Timer/Converter" J post)
5. InMotion (Onboard Mobile Gateway) WiFi Radio (radio compartment in M2 "Timer/Convert" J post)

#### **B. PORTABLE 12VDC EQUIPMENT CHARGING**

The 12VDC portable equipment charging circuit shall be powered by a Vanner Lifestar Model 20-1050CUL-DC which has a 12VDC 20 amp accessory output. The Vanner shall be mounted in the forward upper street side compartment. The input to the Vanner shall be the 125 VAC Kussmaul Super Auto Eject 20 shore line plug in. The 12VDC 20 amp accessory output shall power these circuits:

1. PCR1 (computer prewire in cab console for LIND converter)
2. PCR2 (computer prewire in fwd. squad bench for LIND converter)
3. MCT (computer prewire in cab console for laptop stand)
4. Portable lantern (behind driver's seat)
5. Portable suction (I/O compartment power points)
6. AA Prewire behind panel

### **3.7.7.3 INTERNAL 12 VDC POWER**

- i. The patient compartment shall be furnished with five (5) and the cab with two (2) 12 volt DC 20 amp protected circuits. There shall be four (4) IOTA POWERED cigar lighter size commercial outlets and three (3) VANNER POWERED user installed equipment charging prewired circuits with capped ends.
- ii. The first cigar lighter size commercial outlet shall be mounted in the forward wall at the top half on the outboard edge of the ALS cabinet. The second one shall be located in the ALS cabinet just below the lower shelf and out board on the forward wall. The third one shall be located on the vertical curbside

wall above the squad bench on the aft end approximately at the level of the lower mount of the IV pole alongside the 125 volt AC plug-in. The fourth one shall be mounted on the vertical primary patient action wall. The locations of these outlets are on the approval drawings.

- iii. The remaining three (3) shall be 12 volt prewired circuits with capped ends and a 24" service lead. The first and second prewires shall terminate in the cab console coiled for the portable MCT and PCR computers. A third exists inside the cabinetry, just aft of the curbside entry door.

#### **A. RADIO POWER J POSTS**

There shall be four (4) J-Posts in the radio compartment (street side middle compartment) to provide power to the 8—MHz radios.

1. 50 amp 12 VDC Battery constant power 6 awg wire
2. Ground 6 awg wire
3. 30 amp 12VDC Ignition power 10 awg wire
4. 30 amp 12VDC Timed Battery Switch/IOTA Converter power 10 awg wire

There shall be two conduits to the RADIO COMPARTMENT (street side middle compartment). One 4" conduit shall go between the lower of the forward end of the inboard wall of the street side middle compartment to behind the driver's seat against the LH B pillar to pull radio harnesses through. A 2.5" conduit shall go between the upper inboard corner of the forward wall of the street side middle compartment to the overhead HVAC compartment above the walk through to pull antenna coax through. These are empty conduit expressly designed to add wires after vehicle delivery by the end user or his/her authorized agent shall be supplied and installed. The conduit shall be semi-rigid, nonconductive liner that is free of inside ridges that can bind on the wire harness being pulled through the conduit. The outer jacket shall be a non-conductive, spiraled rigid coil designed to maintain the original shape of the liner, throughout the length of the conduit run. There shall be provided a pull wire through the conduit to aid the purchasing agency in future installation of equipment. There shall also be a 4" air sealed plated over installation hole at the outboard upper side of the forward wall of the street side middle compartment. Another 4" air sealed plated over hole in the O2 compartment on the aft wall outboard just above the height of the action shelf located on the other side of the wall. ANTENNA BASES: The antenna bases shall be installed by the end user.

#### **B. CAB HANDHELD SPOTLIGHT**

The hand held Optronics, Blue Eye 400,000 CP spotlight in the cab shall be installed hardwired to the cab console and powered from the Ignition Hot and Portable Equipment Circuit. The spotlight shall stow under the cab passengers seat in an aluminum tray with a rubber mat in the bottom to prevent slide out.

### **3.7.7.4 MODULE DISCONNECT SWITCH**

- i. There shall be a master Cole Hersee emergency shut off switch, mounted on the LH side of the front console, in the main 12VDC battery feed cable to the module.
- ii. There shall be a timed battery disconnect switch controlled by the Class 1 Multiplex system. It shall be timed so that it disconnects all non OEM and nonessential parasitic loads in five (5) minutes after the OEM ignition switch has been turned off.
- iii. There shall be switches added as part of the multiplex control panels. One each shall be located in the two rear control screens and one each in the front control screen. These shall operate as three way switches to power on and off all patient compartment conversion circuits.

### **3.7.8 125 VOLT AC UTILITY POWER**

The ambulance shall be furnished with a 2 wires, plus ground duplex 125VAC wiring system that is separate and distinct from the vehicles 12VDC system.

#### **3.7.8.1 UTILITY EXTERNAL SHORELINE POWER CONNECTOR**

There shall be a Kussmaul 125VAC Super Auto-Eject Shore Power Plug rated at 20 amps or more with a spring-loaded yellow cover assembly, UL listed for exterior use, located on the left side of the ambulance body close to the driver's door. This shall energize the vehicle's 125VAC circuit from an external power source. This connector shall be labeled: "125VAC, 60 Hz, 20 amp power supply". The plug shall be located on the driver side front corner, facing out, at about 50" off ground on the ambulance body. The shoreline timer shall be an InPower VCM-05-01SF. The block heater shall not be connected to the Shore Power system or any system.

#### **3.7.8.2 ELECTRICAL 125 VOLT AC RECEPTACLES**

There shall be four (4) 125 volt duplex receptacles installed. The first duplex receptacle shall be located on the curb side bulkhead, location to be determined at a pre-build construction meeting. The second receptacle shall be located on the vertical primary patient action wall. The third receptacle shall be in the ALS compartment on the forward wall out-board just below the ceiling. The fourth receptacle shall be in the ALS compartment on the forward wall just below the third receptacle. All receptacles shall be flush mount and each shall have an indicator located within acting as a line monitor indicating a live (hot) circuit. The system shall incorporate a 15-ampere ground fault interrupter (GFI) device, which shall be the receptacle on the action wall.

#### **3.7.8.3 125 VOLT SOLID STATE INVERTER FOR ON BOARD AC POWER**

A Vanner Lifestar Model 20-1050CUL-DC 20 amp, inverting DC to AC, shall be installed. It shall be connected to the on board 125VAC circuit to provide power to the 125VAC outlets when the shore power is disconnected. It shall also be the switch between shore power and inverter to automatically connect shore power to, and drop inverter power to the 125VAC circuit simultaneously, and vice versa. It shall get its 12VDC from the timed battery switch; to provide 125VAC only when truck is running or plugged into 125VAC shore power. The inverter will be remote controlled on and off from the multiplex control screens.

#### **3.7.8.5 CIRCUIT GROUNDING**

Grounding must be accomplished by use of a full ground wire harness. All ground wires shall be black in color and stamped every 4" with the word "GROUND" or letters "GRND". Ground return connections shall be made to the chassis structure, protected from corrosion, and available for service. In no case shall the aluminum body be used as a ground return.

All ground points shall be established with crimped copper ring connectors and dual star washers at each end of the ground strap. Due to the application of undercoating these grounds require no specific labeling.

Additionally, there shall be a minimum of five (5) ground points between the chassis and body components of the ambulance. 3/4", 4 AWG braided ground strap between the engine block and the chassis frame; 2 gauge stranded copper ground strap between the body and chassis frame; 2 AWG stranded copper ground strap between the battery box and the chassis frame; 2 AWG stranded copper ground strap between the driver's seat base electrical panel and the chassis frame; and 2 gauge stranded copper ground strap between the cab floor and the chassis frame.

### **3.7.9 FRONT CONTROL SWITCH PANEL – MULTIPLEX LX-1 DISPLAY MODEL 700**

This front LX1 control panel shall incorporate all options below. It shall be mounted to the front ceiling beam just behind the windshield in an attractive manner up inbetween the cab sun visors high enough to allow the inside rear view mirror to be used to view the patient compartment. It shall be easily viewed and usable from either front cab seat occupant.

#### **A. ELECTRICAL ENVIRONMENT**

The displays will not be damaged when its polarity is reversed with 24-Volts for one minute. The displays shall be able to withstand positive and negative going transients from 100- to 300-Volts and all other tests outlined in SAE 1999 J1113/11. The displays shall not be damaged in any way when subjected to electrostatic discharge as outlined in SAE J1455 1999 4.11.2.2.5.1

#### **B. MECHANICAL PERFORMANCE**

The displays shall not be damaged and shall function normally after any of the environmental factors listed below are encountered:

1. Temperature Cycle Test (SAE J1455 1999 4.1.3.1).
2. Thermal Shock (SAE J1455 1999 4.1.3.2).
3. Humidity (SAE J1455 1999 4.2.3 Figure 4a).
4. Mechanical Vibration (SAE J1399).

#### **C. COLOR DISPLAY SIZE AND ASPECT RATIO**

The displays will be at least 7" in diagonal measurement. The displays aspect ratios will be 16:9 (Wide Screen); the standard 4:3 aspect ratio is not acceptable. The displays shall have multiple color options available.

#### **D. VIRTUAL SWITCH DISPLAY**

The LX1 displays shall be able to turn on and off multiple devices around the vehicle including, but not limited to, warning lights, scene lights, interior lights, oxygen solenoids, the module climate control system, and the vacuum pump. The displays will have the capability of at least 80 virtual switches each. With these virtual switch capabilities the screens must work in tandem so that the current status of the devices or functions can be viewed from either the front or rear display. In addition, the status of each device or function shall be shown on the displays in the form of a button or icon. The text label for each device will be inside the designated button on the screens. For easy verification of the functions on/off or enabled/disabled status, a color indicator shall be displayed on each virtual button. Bid proposers should become familiar with Sedgwick County EMS' current LX1 displays and bid their display's virtual switch/icon function and placement in like fashion.



**E. VISUAL AND AUDIBLE WARNING AND INFORMATION DISPLAY**

The front display will have a graphical image of an actual ambulance. This color image shall display the doors that are open. A message shall also appear on the screen and an audible alert shall sound when there is a module entry door or compartment door "Open" with the vehicle in gear. This display will also display information about the vehicle system voltage, charging current, patient code status, and emergency lighting status.

**F. CLOCK DISPLAY**

The displays shall have a real time clock and display the time.

**G. TIMER FUNCTION DISPLAY**

The displays will have timer capabilities to assist the Technician in taking pulses, measuring time for sequenced doses of medication and to record times of the administration of medications and procedures. When timer is activated, the "real time" clock will continue to be displayed.

**H. COLD AND HOT TEMPERATURE DISPLAY**

The displays must be capable of starting and functioning normally within 2- minutes after being cold soaked at -40° Celsius for 30-minutes. This must be accomplished without the aid of power draining add-on heaters. The displays will be able to function in +85° Celsius without any ill effects. LCDs not meeting this requirement are not properly conditioned for the automotive environment and are prone to failure.

**I. MODULE CAMERA DISPLAY**

This display will provide the driver a view of the patient compartment's camera through the LX-1 screen in the vehicles cab. The camera will be mounted above the rear entry doors and located inside the recessed area of the curb side overhead grad bar and will be facing towards the cab. This will be a non-recording camera and will only provide the driver a view of the patient area.

**3.7.10 REAR CONTROL SWITCH PANELS – MULTIPLEX LX-1 DISPLAY MODEL 450**

Two rear control panel shall be provided. One will be located on the service panel in the action area and the second will be located in the curb side attendant's area. Both rear displays will have necessary graphics for proper care and treatment of a patient. These color images shall display information about the status of the exhaust fan(s), the status of the inside temperature of the patient compartment, the status of the oxygen supply with an audible alarm for when oxygen reaches emergency levels (500-100 psi), an on/off for the oxygen system along with a manual override system. A warning message shall also appear on the screen and an audible alert shall sound when the oxygen tank pressure level has fallen below 500 psi. These displays will also show the status of the climate control system, interior lighting, inverter, suction, timer, and other patient care devices that may be installed in the ambulance.

**3.7.11 MARKING OF SWITCHES, INDICATORS AND CONTROL DEVICES**

All switches, indicators, instruments, circuit breakers and control devices supplied by the ambulance manufacturer shall be clearly visible to the ambulance personnel. They shall be perceptively and permanently identified with at least 12-point letters for the noun or function and 8 point for the remainder of the legend. The identifications shall be contrasting colors etched or engraved in plastic or metal, grouped according to function and mounted in illuminated or backlit panel(s) or console.

### **3.8 LIGHTING AMBULANCE EXTERIOR AND INTERIOR**

#### **3.8.1 EXTERIOR LIGHTING**

##### **A. REAR**

There shall one (1) brake light mounted centered above the rear doors and above the backup camera mount. This shall be a Whelen M7 Series LED clear lens with red lights This light shall be wired into the OEM brake light circuit as a third brake light and will also be used as an emergency flashing light when the brakes are not in use.

Two (2) Whelen M6 Series LED lights with red lens for use as brake/taillights shall be mounted outboard of rear doors. These will be mounted on the top of a series of lights including brake/taillights, turn signals, backup lights. This series of lights will be mounted above the threshold line of the rear doors.

Two (2) Whelen M6T Series LED amber lights with clear lenses for use as turn signals/OEM flashers, shall be mounted outboard of the rear doors. These will be mounted in the middle of a series of lights including brake/taillights, turn signals, backup lights. This series of lights will be mounted above the threshold line of the rear doors.

Two (2) Whelen M6 Series LED lights with clear lenses for use as reverse or back up lights. These shall be mounted outboard of the rear doors. These will be mounted on the bottom of a series of lights including brake/taillights, turn signals, backup lights. This series of lights will be mounted above the threshold line of the rear doors.

Two (2) Kinequip KFL-SLC8 LED strip lights shall be mounted above the rear bumper flip up step, in the kick plate recess.

Two (2) White LED lights for illuminating the license tag area.

##### **B. SIDE**

Two (2) Whelen M6 Series LED lights with red lenses. One (1) shall be mounted on each side body at the rear approximately 50" off the ground. The lights shall have a steady-burn function in conjunction with the DOT lights and shall flash in conjunction with the turn signal lights.

Two (2) Whelen 2" round white LED Lights with chrome flanges shall be mounted to the front of the box at the cab step. This will illuminate the cab step/running board and will be activated by cab doors.

##### **C. CLEARANCE/MARKER LIGHTS**

Two (2) rear corner LED ICC/warning lights shall be DOT approved compliant light fixtures with clear lenses, mounted to the rear outer corners of the top of the ambulance module. These lights will be red/amber.

Three (3) Kinequip KML-R-SC rear centered LED ICC clearance lights shall be mounted along the roof line. These lights shall illuminate the height of the vehicle, and define the vehicle centerline. These lights will be red and have chrome bevels and will illuminate with the park lights and headlights.

Two (2) front corner LED ICC/warning lights shall be DOT approved compliant light fixtures with clear lenses, mounted to the front outer corners of the top of the ambulance module. These lights will be red/white.

Three (3) Kinequip KML-R-SC front centered LED ICC clearance lights shall be mounted along the roof line.

These lights shall illuminate the height of the vehicle, and define the vehicle centerline. These lights will be amber and have chrome bevels and will illuminate with the park lights and headlights.

### **3.8.2 EMERGENCY LIGHTING**

The emergency lighting system must be capable of providing the ambulance with 360 degrees of conspicuity for safety during its missions. This system must display highly perceptible and attention getting signals and includes the following: All exterior housings for lamps, electrical devices and fixtures shall be corrosion resistant and weatherproofed. Electrical fixtures attached to the side of the ambulance below the 75" level shall be near flush mounted, not to protrude more than 2", except for ventilators.

#### **A. REAR**

Two (2) Whelen M9 Series Super-LED clear lenses with red LED shall be mounted at the extreme upper corners of the ambulance body below the horizontal roof line and shall not be obstructed by doors.

Two (2) Whelen M9 Series Super-LED clear lenses with blue LED shall be mounted one (1), centered on either side of the rear door opening and visible through the upper half of the door windows when doors are open.

#### **B. SIDE**

Four (4) Whelen M9 Series Super-LED clear lenses with red LED. Two (2) shall be mounted on each side of the modular ambulance body below the horizontal roof line.

Two (2) Whelen M7 Series Super-LED with clear lens and red/clear light (red towards front) shall be mounted as forward and as high as possible but not on top of each fender to serve as intersection lights.

Front, middle and rear skirt rail lighting LED lighting shall be installed into the module skirt rail to provide additional perimeter warning on the lower section of the module sides. Lighting shall flash and be controlled through the conversion electrical system. Lighting colors shall be RED/WHITE with location to be determined at a pre-build meeting.

All compartment doors will have a Kinequip red/white LED lighting mounted to the outer surface of all doors that are opened to rear traffic. These lights shall be 1" tall and 1.75" long with 4 LED lights per fixture (2 red, 2 white) Location to be determined at pre-build meeting.

#### **C. FRONT**

Seven (7) Whelen M9 Series Super-LED clear lens lights shall be mounted in a straight line on the front of the modular ambulance body as high as practical without protruding above the roofline. The light configuration from passenger to driver side facing the ambulance shall be Red-Clear-Blue-Clear-Red-Clear-Red.

Four ea. (4) Whelen LINZ6 Super-LED lights shall be mounted onto the OEM grill. Two (2) shall be clear lens with red LED and two (2) shall be clear lens with blue LED. Wiring shall allow for the installation of the two (2) reds on the driver side and two (2) blues on the passenger side grill and flash according to 3.8.3.2.D.

#### **D. CHROME FLANGES**

All emergency and exterior lights provided shall include a chrome bezel.

### 3.8.2.3 SWITCHING

#### A. EMERGENCY LIGHTS

The emergency warning light system shall be controlled with an "Emergency Master" switch/sequencer in the LX-1 front display. There shall also be a "Primary" and "Secondary" mode switch. When the primary mode is selected, all emergency lighting shall be activated and sequenced together. When secondary mode is selected, six (6) upper box and the two (2) outer lights on the front of the module shall be activated. All emergency lighting sequencer circuitry shall be integrated into the LX-1 system. When "Primary" mode is initiated, all emergency lighting shall be energized in a sequential manner. Switching of emergency lighting shall operate by a master switch. The Primary mode shall be activated any time the Emergency Master switch is on and the gear shift is out of park, so that the function reverts to Primary mode when ambulance is driven especially if other modes have been selected.

#### B. BACKLIGHTING

Backlighting for the front control switch panel shall turn on with the headlights and be controlled by the headlight switch rheostat function.

#### C. FLASHER

Flasher function shall be controlled by the LX-1 multiplexing system.

#### D. FLASHING RATES AND PATTERNS

All emergency lights shall be set to a minimum of a quad flash at a rate of 75 flashes per minute.

In "Primary" mode, the six (6) upper box lights, two (2) front outer box lights, and one (1) front center box light shall flash alternately from the two (2) rear blue box lights, four (4) remaining front box lights. The intersection lights shall flash red and red alternately from clear and clear. The intersection reds will flash with the red grill lights; the intersection clears will flash with the blue grill lights.

### 3.8.3 FLOOD AND LOAD LIGHTS

Four (4) flood and two (2) loading lights shall be not less than 75" above the ground and unobstructed by open doors. Two (2) each floodlights shall be located on the left and right sides of the ambulance. The lights shall be a Whelen LED M9 series scene lights. Two (2) each rear loading lights shall be a Whelen LED M9 series scene lights.

Loading lights shall automatically activate when rear doors are open. When vehicle is placed in reverse mode, the loading lights and the rearward most scene lights shall be activated. The curbside floodlights shall automatically activate when side module door is open.

Flood and loading light switches shall be located in the LX-1 display, indicated as left, right and rear and operate independently. Loading lights shall be of same size and shape as side floodlights and be mounted in the same manner as the side and rear emergency lights. All loading and scene lights mounted on the module shall include a chrome bezel.

### 3.8.4 INTERIOR LIGHTING

#### A. DOME

The patient cabin shall have a single fixture that extends within eighteen (18") inches of the rear header pad. The light will be a Kinequip fully populated light rail and shall be 90" long by 4.5" wide. The light rail shall be fully populated with LED lighting. The lighting shall have 3 levels of intensity in addition to having a red lighting feature. The single fixture shall have individual circuit boards containing LED lighting. The light rail shall be constructed of not less than .090" aluminum and shall be anti-microbial

powder coated white to match the ceiling panels. The fixture shall be capped off at both ends to match the light rail extrusion to give the light rail an aesthetically appealing look and all the fasteners shall match the color of the light rail. There shall be switching in both the cab and the patient area to operate the lights both in low and high output. There shall also be two full length rows of red LED lights on a separate switch to operate with or without the main white lights. The patient compartment lights shall be on for 15 minutes after one of the entry doors has been opened and left open. The compartment light will stay on for 5 minutes after the entry door is closed. The compartment lights shall also come on once the "unlock" button has been depressed on the keyless entry remote OEM key fob and remain on for 15 minutes. The ceiling light configuration shall meet current Federal Specifications KKK-A-1822-4.

**B. ACTION AREA LIGHT**

There shall also be a 4" round surface mount LED dual color (red/white) light with ON/OFF switch in the action area close to the LX-1 display. This light will be on both the street side action area and the curb side attendant's area.

**3.9 CAB-BODY PROVISIONS**

The vehicle cab shall be OEM with at least the following features:

**A. TRIM**

Ford XL deluxe trim package with high trim door panels and cloth headliner.

**B. FACTORY RADIO**

A OEM AM/FM stereo CD-player clock radio shall be installed in the dash.

**C. VISORS**

Dual cloth sun visors shall be modified to accommodate the placement of the front multiplexing display. The multiplexing display will be mounted at the cab ceiling, between the sun visors.

**D. SEATS AND ARMRESTS**

Ford 21A High Back Cloth Bucket Seats with Armrests.

**E. HVAC**

OEM heater, defroster, ventilation, and air conditioning.

**F. IGNITION KEYS**

Key operated ignition switch keyed to master key furnished by the County. Six (6) extra door/cab keys shall be provided per chassis.

**G. FUEL GAUGE**

Fuel gauge.

**H. WINDSHIELD**

Tinted windshield.

**I. GAUGES**

Oil pressure gauge, volt gauge, and temperature gauge.

**J. SEATBELTS**

Seatbelts/shoulder harness - both seats.

**K. DOOR KEYS**

Cab doors and ignition locks keyed to master key furnished by the County.

**L. HORNS**

Shall be equipped with OEM's dual electric horns.

**M. MAP LIGHTS**

Two (2) 3" round LED lights with red/white lighting for day/night use shall be installed in the headliner, above both the drivers and passengers front seating. The lights will have a black Bessel and the on/off and red/white controls shall be attached to each light.

**N. ELECTRIC DOORS AND WINDOWS**

OEM electric windows and door locks in the cab. Two (2) programmed Ford brand remote keyless entry FOBs shall be supplied for each delivered ambulance. The electric power door locks shall be wired to control the exterior door Tri-mark lock actuators on the module. The unlock signal from the door lock switches or the remotes shall activate the module dome lights for their timed on cycle.

**O. LANTERN**

There shall be a rechargeable lantern installed. This shall be an Able 2 Products Company Sho-Me 09.201LED Spot/Flood Light. Color shall be Safety Yellow. The Sho-Me light shall be hard wired into the Portable 12V Equipment Charging Circuit. Power for the light shall come out from the behind the driver's seat base. It shall be mounted on the floor, behind the driver's seat facing inward lined up at the right hand side of the seat base.

**P. FLOORING**

OEM black, heavy duty, vinyl flooring. There shall not be any carpet on the floor of the cab.

**Q. DAYTIME RUNNING LAMPS**

OEM option non configurable code 942 to be provided.

**R. INSULATION PACKAGE**

Cab OEM insulation package shall be included.

**S. AIR BAG SWITCH**

A Ford 62C OEM Passenger Side Air Bag cut-off switch shall come installed. This will be accessed using the ignition key and will allow the passenger side air bag to be deactivated.

**T. Windshield Wipers and Washer**

The ambulance shall be equipped with OEM intermittent windshield wipers and washer.

**U. CAB CONSOLE**

The Cab Console shall be designed to hold the MCT computer mount on the forward flat top of console, closest to OEM engine cover. The forward section of the console shall be constructed with a frame work to secure the laptop computer mount. There shall be at least a 5/16" metal plate incorporated into the top of the forward section of the cab console to reinforce the console to secure the MCT computer mount. In the forward section top left on the driver's side shall be the illuminated white Howler momentary switch. On the driver's side wall of the forward section shall be the Cole Hersee Emergency Module Shut-Off Switch, accessible by the driver at all times. In the forward section on the Passenger's side and low along the floor, the Handheld Spot Light shall be hardwired to the console wiring harness contained within the

console. The Spot Light shall be securely mounted under the cab's passenger's seat. Two siren control modules shall be installed in the section just aft of the MCT computer mount, at an approximate 45 degree angle. Then aft of the siren controls, there shall be a map book/PCR computer slots and paperwork slots. Then aft of the slots shall accommodate be two 4" drink holders. The console shall be secured to the cab floor and OEM engine cover. The console shall be designed that it can be easily removed for service work. All of the latest design shall be finalized at the pre-construction conference.

### **3.9.3 CAB DRIVER AND PASSENGER CHAIRS**

OEM dual front high back color coordinated cloth chairs (gray) with inboard raise-able armrests and back adjustment and have the full unobstructed seat track available.

### **3.9.4 CAB DOOR STRAPS**

The cab doors shall have a pair of door straps. The straps shall be constructed of the same webbing material as seat belts. They shall be looped and sewn to allow the full tension of the door to be applied. The loops shall be installed in brackets and the brackets bolted to the door and the A pillar at the midpoint height of the under dash side panel, when the door is fully open. These door straps shall alleviate tension from the cab door hinges during full extension.

### **3.9.5 OUTSIDE REARVIEW MIRRORS**

OEM standard mirrors. The mirrors shall be below eye level, powered and telescoping.

### **3.9.7 BODY PROTECTION**

#### **3.9.7.1 FENDERETTES**

Bright finish 16 gauge stainless steel fender extensions shall be provided at the rear wheel openings. Dual rear wheels, which protrude beyond the ambulance body, are not permitted even if fender extensions are provided. Fenderettes shall be solidly mounted to the box with stainless steel screws, lock washers and nuts.

#### **3.9.7.2 MUD FLAPS**

Heavy duty mud flaps at least as wide as the rear tires shall be provided per SAE J682 behind the rear wheels and shall be reinforced at the point of attachment to the vehicle. The lower edge of the mud flaps shall be approximately 7" above the ground when installed.

#### **3.9.7.3 FUEL FILL SPLASH PLATES**

There shall be an 8.00" x 8.00" 65 degree cast aluminum fuel filler guard recessed into the body above and behind the streetside wheel well. Steel fuel fill protectors are not acceptable. This protective bezel shall be sealed to the body to prevent spilled fuel from seeping behind the bezel and shall have a rubber grommet hole to protect the fuel cap retention strap.

#### **3.9.7.4 CORNER GUARDS**

The lowest front twenty four inches (24") of all four corner post extrusions shall be protected against stones and road debris. The corner post guards shall be formed of .080 thick polished aluminum diamond plate, contour fit to the corner post extrusions and riveted into place. A bead of silver colored, silicone sealant shall be applied across the top edge of the guards. The bottom of edge of the guard shall be left unsealed to promote moisture drainage.

Both front and rear corner guards shall be fastened to the body with stainless steel rivets.

#### **3.9.7.5 ROCK GUARD**

The front of the body shall have skirt-line protection plates made of .080 aluminum diamond plate. The corner posts shall have form fit diamond plate protection height matched to the frontal plates. The height of the protection is twenty four inches up from the body skirt line

#### **3.9.7.6 RUB/SKIRT RAILS**

The entire skirt-line of the body, forward and aft on the rear wheels shall have formed .375' diamond plate skirt rails to protect the body. Each rail shall be chamfered 45 degrees at both ends. There shall also be a series of twelve (12) rectangular holes, six (6) each side. Six (6) of the holes shall face outward and six (6) shall angle downward. The side facing shall be for LED warning lights and the downward shall be for ground lighting. All LED lights in the skirt rails shall be made waterproof. The rails shall be fastened through the bottom of the rail into the bottom of the modular body. The rails shall not cut into the paint. They shall be mounted through nylon isolators in such a manner that they are spaced off the body.

#### **3.9.7.7 REAR KICK PLATE**

The rear kick plate shall be made of 0.100 inch thick polished aluminum diamond plate and run from corner post to corner post in one continuous piece. The height shall not be less than 18 inches tall, and both sides will angle from the corner extrusions at a 45 degree angle towards the threshold of the rear access doors. It will continue across the bottom of the rear access doors threshold and also into the recess area of the rear fold up bumper step.

#### **3.9.7.8 RECESSED TAG AREA**

The kick plate shall feature a centered and illuminated recessed area to mount a standard U.S. six inch high by twelve inch wide license plate. The recessed area must be TIG Welded around the perimeter of the opening. Threaded inserts and bolts to install the tag shall be installed and provided. The tag area shall be centered in the kick plate.

#### **3.9.7.9 RECESSED RECOVERY EYES**

Two vertically oriented, heavy duty cast iron 3" tow eyes with a one inch threaded stud shall be through bolted to a one half inch thick steel plate that is continuously welded to the end of the O.E.M. Frame. The recovery eyes shall be recessed into the kick panel within an cast aluminum boxed out frame so that the tangency of the eyes is co-planer with or set back up to one inch. The recovery (tow) eyes shall not be trip hazard to personnel entering and leaving the rear access doors.

#### **3.9.7.10 RUNNING BOARDS**

The cab shall be equipped with a set of heavy duty diamond plate running boards (auxiliary step). Each shall be mounted to the cab under-door pinch weld and modular body. The front of each shall be flared upward to form a splashguard. Flaring shall protrude out past the cab fender at least 4" at the bottom and shall be perpendicular to a horizontal plane as it curves up the wheel well. Running boards shall be .125" 3003 alloy aluminum diamond plate. The running board shall incorporate a Grip-Strut in step area of running board.

#### **3.9.7.11 BUMPERS AND STEPS**

The bumper shall be framed in with ¼ x 2 x 4 6063-T6 aluminum rectangular tubing. The bumper shall be through bolted directly to the chassis frame. The rear bumper shall protrude from the rear surface of the module body to the rearward most metal surface by at least nine inches (9"). The bumper shall run the full width of the module. The bumper will have two (2) skids mounted to the bottom side of the bumper to protect the fuel tank from bottoming out. The outer bumper ends (pontoons) shall be covered in .100 polished aluminum aggressive diamond plate. The outer corners shall be chamfered and shall extend out past the body and line up with the lower body side skirt rails to create a continuous



look. Each pontoon cover shall be through bolted to the bumper frame with stainless steel, pan-head, Phillips head, ¼-20 bolts and Nylock nuts. A flip up step shall be provided to allow closer access to the patient cabin floor. The step shall be as wide as the rear access door jamb. The step shall be made of 2" x 9-1/2" grip strut commercially perforated aggressive traction. A stainless steel piano hinge shall have a staked in, ¼" diameter pin, one inch knuckles and one Type-F ¼" through bolt every four inches. The flip up step when it is moved to the vertical position, will recess into the module structure. This is done for safety purposes to prevent a tripping or falling hazard. The Rear flip up step shall be coated in a yellow safety coating for visibility. The rear bumper shall meet the requirements set forth in the AMD Standard 018- Rear Step and Bumper Test. The bumper shall be able to accommodate a 500 lb. load with maximum deflection of 1" and no more than .25" permanent deformation.

#### **3.9.7.12 BUMPER DOCKS**

The rear bumper shall be equipped with two (2) natural, black rubber dock bumpers. The bumpers shall measure 3 3/8 inches high by 12 inches long by 2 1/8 inches thick. The bumpers shall be through bolted to each pontoon with two (2) 3/8 diameter, grade 8 bolts. The bolts shall be counter bored into each dock bumper. These bumper docks will be mounted on each of the bumper pontoons.

#### **3.9.7.13 REAR BUMPER FRAME BRACKETS FOR FUEL TANK**

Where the rear bumper mounts to the chassis vehicle frame, a bracket or skid plate shall be mounted on each frame rail. This bracket is designed to assist in protecting the fuel tank in the event the ambulance bottoms out while traversing dips in the road and steep approaches from roadways. The brackets shall be designed and engineered to protect the fuel tank, as well as the rear step bumper. It shall be able to withstand the weight of the ambulance and any impact or force delivered to it. The bracket shall be bolted to the vehicles frame so it can be replaced in the event it becomes damaged.

### **3.10 AMBULANCE BODY AND PATIENT AREA**

#### **3.10.1 BODY ACCOMMODATIONS**

The ambulance body proper and patient compartment shall be sufficient in size to transport occupants as specified in Plan A of KKK-A-1822F, and accommodate and store all the stretchers, cots and litters through the range of dimensions as specified in KKK-A-1822F.

#### **3.10.3 TECHNICIAN SEATING**

##### **A. CAPTAIN SEAT (ALS SEAT)**

A rear facing high-back captain ALS chair without armrest shall be located to the rear of the partition wall. This shall be an EVS 1880 Child/Attendant seat with seamless vacuum formed vinyl. The seat base shall be swivel, up and back type. It shall be securely bolted through the module floor structure. A retractable six (6) point seatbelt in a totally enclosed housing shall be provided. The mounting hardware, seatbelt materials and configuration shall be in compliance with applicable FMVSS. It shall incorporate an integrated child restraint seat, lap and shoulder belts. The seat belts for this chair shall be installed so the female end is on the left hand side of the chair. The seat shall be dark grey in color.

##### **B. TECHNICIAN SEAT (CPR SEAT)**

To the rear of the first action area on the street side of the module, there shall be a bench type seat that is an approximate 24" wide. This area is intended for use as a technician seat for administering patient care. There shall be a back, fore, and aft pads for this seat that are removable for cleaning. The back seat pad shall be a minimum of 21" wide x 34" high x 3" thick. The fore and aft side pads shall be a minimum of 14" wide x 10" high x 1" thick. The hinge for this cabinet shall be secured into an aluminum brace. The hinged base shall be secured with a positive locking latch to keep it in place. A stainless steel

kick plate shall be mounted on the cabinet base, directly below the technician seat to protect the cabinet from damage. The kick plate will be the full width for the technician seat area and will the full height of baser cabinet area. A retractable six (6) point seatbelt in a totally enclosed housing shall be provided for this Technician seat. The seat shall be dark grey in color.

**C. TECHNICIAN SEAT (CURB SIDE)**

A high-back captain ALS chair without armrest shall be located on the curb side of the patient care area, situated above the curd side wheel well. This seat will be a seamless vacuum formed vinyl with an enclosed retractable six (6) point seat belt system. The seat base shall be swivel and be able to track forwards and backwards. The seat belt system shall be made to allow the seated attendant to stand up if needed, but also will lock the seat belt system in place during an accident. The seat will also be able to have the backrest portion to fold and lay flat against the seat portion in the event a lay down patient is needed to occupy this space. The seat and seat base shall be securely bolted through the module floor structure. The mounting hardware, seatbelt materials and configuration shall be in compliance with applicable FMVSS. The seat shall be dark grey in color.

**3.10.4 PATIENT COMPARTMENT INTERIOR DIMENSIONAL PARAMETERS**

**A. LENGTH**

Length measured from the partition to the inside edge of the rear loading doors at the floor shall be at least 160". This length shall provide at least 26" and no more than 32" of unobstructed space at the head of the primary patient measured from the fall of the backrest of the ALS seat in the forward position to the forward edge of the cot. This space should allow equal walking space between the rear doors and the cot.

**B. WIDTH**

The width of the compartment, after installation of the cabinets shall provide a total of 18" plus or minus 2" of clear aisle walkway between the primary cot and the curb side attendant's area and 10" plus or minus 2" clear isle between the primary cot and street side cabinets.

**C. HEIGHT**

The patient compartment shall provide at least 72" height over the primary patient area measured from floor to ceiling, exclusive of cabinets, equipment, symmetrical corners or edges.

**D. CAB EXTENSION**

The cab length shall be extended ten (10) inches beyond the O.E.M. cab back. With the seat backs set in a normal, comfortable angle, both driver and passenger seats must have 100% of the O.E.M. seat travel without interference between the seat and the finished bulkhead wall. A rigid integral aluminum channel frame shall be built into the body front to accommodate this requirement. The channel frame shall extend from the module floor to the roof rail as well as a horizontal channel that is height aligned with the cab roof. The cab extension frame work shall enhance the strength of the cab and shall be positioned to receive twenty five (25), 1/4" x 28 cab to body attachment bolts. The cab extension area shall be professionally finished in heavy duty vinyl upholstered plywood panels. The vinyl color shall be keyed to the cab and all fasteners shall be concealed with snap on, upholstered button shaped caps. Fiberglass cowls or cab extensions are not acceptable. Fiberglass extensions tend to crack, leak and offer little structural enhancements to the cab

**3.10.5 BODY GENERAL CONSTRUCTION**

**A. BODY MATERIAL GENERAL**

The body shall be prime commercial quality, all aluminum. Wood, plywood or particleboard type material shall not be used in the construction of the body. The exterior of the body shall be finished smooth with

single sheet skin or finished without exposed seams and have symmetrically rounded corners and edges, presenting a modern and aerodynamic appearance and shall embody provisions for doors and windows specified herein.

**B. FASTENERS**

All sheet metal screws installed in doors, windows, license plate bracket, body, etc., shall be of the type that incorporates red Loctite impregnated on the threads of the fastener. Any nuts used on vehicle shall be of locking type.

**3.10.6 AMBULANCE BODY STRUCTURE**

**A. CONSTRUCTION CHARACTERISTICS**

The ambulance body shall be all aluminum. The body sheet shall be reinforced with structural members designed to resist deflection and hold up to extreme ambulance service per the latest revision of federal specification KKK-A-1822F. The side, roof, front and rear sheet shall be derived from .125", 5052-H-32 aluminum sheet. The roof sheet shall be one (1) piece, .090", from roof rail to roof rail. The side structure and structural shapes shall be extruded of 6105-T5 aluminum. The body shall be capable of providing impact, deformation and penetration resistance in the event of a collision. The body structure shall be capable of passing a standalone static load test on a type-tested body. The test shall be conducted in accordance to AMD-001 **except the test weight shall be a minimum of 55,000 pounds**. The same unit shall be subjected to the same test with the body turned on its side. A complete copy of the testing documents with photos, must be supplied upon bid review if requested by this agency.

**B. BODY MATERIAL FRAMEWORK**

The modular ambulance body shall be constructed with a framework on all sides, top and bottom of at least 2" x 2" x .125 6061T6 extruded aluminum tubing welded together to form a complete unitized safety cage.

**C. BODY DROP**

The skirt line of the modular body ahead of the rear wheels shall be 3" lower than behind the rear wheels. This will allow the curbside entry step to be lower to ground level making it easier to enter the curbside entry door and meet the requirement of KKK-A-1822F as amended.

**D. WELDING AND FASTENERS**

Each side and the roof shall have no unfinished seams or welded joints at any point (except outer edges). Welding and bonding shall attach the skin; however, no rivets may be used. All parts of the ambulance body and attachments shall be fastened with rust resistant fasteners in a manner that will preclude loosening. Cabinets, benches, partitions, oxygen cylinder hold downs, guide rails and cot holders shall be attached to metal tapping plates and/or framing welded to the body structure. Those components shall be fastened by welding, bolting or using tapered tapping screws on at least 24" centers maximum as applicable to the component being installed. Self tapping metal screws shall not be used in assembling the ambulance module! All welds within the modular body shall meet American Welding Society (AWS) codes for structural and sheet welding. Compliance documentation must be supplied upon bid review if requested by this agency.

**E. CORNER POST EXTRUSIONS**

The corners of the modular body shall be made from an extruded aluminum structure that has an alloy of 6063-T6. The corner post extrusion shall be 3.25" x 3.25" with a 2" radius on the outer corner. The corner post extrusion shall have an internal web member that runs on a 45

degree angle to the front and side of the modular body. Where the internal web meets the exterior extrusion wall the internal web shall flair into a .125" radius giving a .25" wall thickness at the exterior wall of the extrusion. There shall be a .75" flange on each side of the corner post extrusion that is a side skin receiver. The side skin receiver shall be funnel shaped to allow the exterior side skin to fully seat into the corner post extrusion. The interior walls of the corner post extrusion shall be .125" thick and they shall incorporate a 45 degree weld bevel on the interior corners.

**F. ROOF RAIL EXTRUSIONS**

The roof corners of the modular body shall be made from an extruded aluminum structure that has an alloy of 6063-T6. The roof rail extrusion shall be 4.55" x 3.5" with a 2" radius on the outer corner. A full length drip rail shall be incorporated into the roof rail corner post extrusion, drip rails at the top of the modular body that are not inclusive of the roof rail extrusion do not meet the intent of the specification and are deemed non-compliant to this specification. The roof rail extrusion shall have an internal web member that runs on a 45 degree angle to the front and side of the modular body. Where the internal web meets the exterior extrusion wall the internal web shall flair into a .125" radius giving a .25" wall thickness at the exterior wall of the extrusion. There shall be a .75" flange on the lower side of the roof rail extrusion that is a side skin receiver. The side skin receiver shall be funnel shaped to allow the exterior side skin to fully seat into the roof rail extrusion. There shall be a .75" x .125" recess into the roof side of the extrusion for locating the roof sheeting. This recess shall have a 45 degree weld bevel. The interior wall of the roof rail extrusion that is in-board of the side skin funnel shall be 2" wide so that they line up with the exterior side wall. The interior wall of the roof rail extrusion that is in-board of the roof sheeting recess shall be 2.25" wide so that they line up with the 2.25" roof bows. The interior walls of the roof rail extrusion shall be .125" thick and they shall incorporate a 45 degree weld bevel on the interior corners.

**G. ROOF SHEETING**

The roof shall be constructed of one-piece .125" smooth aluminum. This aluminum shall be a highly corrosion resistant 5052-H32 alloy with a tensile strength range of 28,000 to 33,000 psi. The four (4) edges of the sheet shall be continuously welded to the roof rail extrusion to prevent leaks. All perimeter welds shall be ground smooth and worked smooth prior to the overall body paint and finish. Non-fully welded roof sheets to the roof rail extrusions do not meet the intent of this specification and are deemed non-compliance to this specification.

**H. ROOF BOWS**

The roof sheet shall be supported by full width .125" x 2" x 2.25" architectural box tubing. The roof bows shall be located on twelve (12) inch centers. The roof bows shall be M.I.G. welded to the roof rail extrusions with no less than four (4) and one-half (1/2) inches of continuous weld per end. The roof sheet shall be bonded to the roof bows with VHB (Very High Bond) adhesive tape.

**I. LATERAL ROOF SUPPORTS**

If ducted ceilings are required for the HVAC, additional structural support will be added as a result of the 2" ducted heat and A/C delivery system. 2" x 2" three-sided extruded channel with two sides being .125" thick and the bottom surface for fastener acceptance to be .160" shall be full length of the body

**J. ROOF CORNERS**

The roof rail extrusions shall be welded together along the roof bow mating walls at the corners. In addition, the outer surfaces of the roof rail extrusions shall be 100% continuously T.I.G. welded to cast

aluminum corner castings. The castings shall have internal mating flanges that extend horizontally inside the upper roof rail extrusion and vertically down the corner post extrusions

**K. SIDE STRUCTURAL MEMBERS**

The sheet edges will be fit into slots designed within a proprietary, double hollow, corner post extrusion in addition to the two part acrylic bonding agent. The sheet will be MIG welded and structurally bonded to the extrusion. Double-hollow designed corner post extrusions shall be used to weld side and end assemblies together. Horizontally oriented, adjoining structural box tubes shall be welded to the corner post with a minimum 50% surface weld. The intermediate structural members of the side grid shall be two (2) inch by two (2) inch 6105-T5 aluminum, architectural box tubing. All entry and compartment door adjacent members shall be one quarter (1/4") inch, two (2) inch by two (2) inch proprietary extruded shape. The main structure shall surround the compartment openings and provide intermediate skin support. The intermediate structure spacing shall have a nominal dimension of twelve (12) inches. All grid structure shall be welded together with a minimum of 75% of available mating surface. The side skin shall be bonded to the structural grid using (1.75") wide, VHB (Very High Bond) adhesive tape. The edges of the tube that touch the skin will be sealed with Bostic Brand, Simson ISR 70-03 Construction Adhesive.

A continuous side impact beam shall be welded to side body and sidewall extrusions to each side of the unit where the curb side attendants seat and streetside CPR seats are located. This side impact beam shall allow for secure and customizable mounting points for the CPR seat seatbelts. The side impact beam shall also provide additional structure and rigidity in these seating locations in the event of an accident.

**L. SIDE IMPACT RAILS**

Both the street and curb side occupant seat belts as well as the lay down patient area on the curb side of the vehicle shall be drilled and tapped through one-half (1/2) inch by four (4) inch plate on the curbside and one-half (1/2) inch by four (4) inch plates on the streetside that are continuously MIG welded or Huck structurally fastened to the structural grid.

**M. SIDE SHEET**

The side sheet shall be .125 thick, 5052-H32 aluminum. The side sheet compartment opening cut outs shall be cut with CNC controlled, gantry mounted plasma or high speed routing equipment. The door opening shall be cut to allow for the skin to be molded into the jamb opening to create a crevice free jamb with a smooth paint finish. The machine formed skin shall return into the body at least 3/4" to meet the jamb extrusion. This method will encourage square openings to receive the door assemblies and maintain critical structural locations. The door jamb shall have a full structure frame behind the jamb skin return. It shall not rely strictly on the skin for the compartment jamb. Pre-determined ventilation louvers shall be *formed* into the body sheet, where specified. *A seamless door jamb exterior is required to minimize corrosion. Extruded type exposed door jambs do not meet this specification. The skin shall completely conceal the door-jamb from view.* The only visible seams on the body sheet shall be at the corner posts. The skin shall extend .688" below the skirt rail extrusion to a drip edge to keep moisture from collecting underneath where the skin meets the skirt rail extrusion.

**N. CORNER POST EXTRUSIONS**

The corners of the modular body shall be made from an extruded aluminum structure that has an alloy of 6063-T6. The corner post extrusion shall be 3.25" x 3.25" with a 2" radius on the outer corner. The corner post extrusion shall have an internal web member that runs on a 45 degree angle to the front and side of the modular body. Where the internal web meets the exterior extrusion wall the internal web shall flair into a .125" radius giving a .25" wall thickness at the exterior wall of the extrusion. There shall be a .75" flange on each side of the corner post extrusion that is a side skin receiver. The side skin receiver shall be funnel shaped to allow the exterior side skin to fully seat into the corner post extrusion. The interior walls of the corner

post extrusion shall be .125" thick and they shall incorporate a 45 degree weld bevel on the interior corners.

**O. WALL GUSSET PLATES**

The front wall, side wall and rear wall structural members shall have additional support with a fully welded gusset system that shall be made of 5052-H32 aluminum plate, one quarter (1/4) inch thick by four (4) inch by four (4) inch.

**P. FLOOR**

Floor structures shall be 6105-T5 aluminum, one-quarter (1/4) inch by 1.500 by 3.000 aluminum, architectural proprietary shape with bevels built into the extrusion die to allow for full weld penetration on the edge of the extrusion. The die must be designed so that the inside of the corner has the same thickness of aluminum as the remaining four sides. The module floor shall provide core support for the side assemblies and shall incorporate a minimum of three (3) full body width floor members shall connect to and support the side wall assemblies. Each member shall be made of 6063-T6 aluminum. The front floor tube is to be a minimum of 3.000 x 1.500 x .250 thick 6105-T5 aluminum tube which is fully MIG welded into the front corner post at each side of the vehicle. On top of the tube is to be a minimum .188 thick 5052 aluminum front sill running full width of the body. One of the members located just forward and/or rear of the rear wheel housing shall be one-quarter (1/4) inch by 1.500 by 3.000 rectangular architectural box tubing. The last floor cross-member shall be a 1.625 x 2.188 x .250 6105-T5 aluminum tube on the rear wall which is fully MIG welded into the rear corner posts at each side of the vehicle. This tube is butted up and welded to a 2.000 x 1.000 x .125 thick 6105-T5 tube which is also fully MIG welded to the rear corner post. A minimum of eight (8) total 6" gussets, (1/4) inch thick will be installed to reinforce two (2) at each cross member and sidewall tubes directly fore and aft of the axle.

**Q. FLOOR GUSSET PLATES**

The floor member to side wall fully welded gusset system shall be made of 5052-H32 aluminum plate, one quarter (1/4) inch thick by four (4) by four (4) inch and quarter (1/4) inch x six (6) inch x six (6) inch. A minimum of 12 gussets shall be located, dual gusset plates at each main cross member site.

**R. WATER TIGHT PATIENT CABIN**

The sub floor shall be shielded from moisture. A forty (40) mil thick aluminum sub sheet shall be sealed to the floor structure with silicone sealant. Additional aluminum plates shall be intermittent welded between compartments, wheel well liners, step wells and fuel filler housings. All of the areas shall be thoroughly sealed from one to the other, creating a sealed patient cabin from the outside. Extrusion hollows shall be filled with expandable foam sealant to prevent fumes and moisture from entering.

This floor shall exceed the requirements set forth in AMD Standard 020 Floor Distributed Load Test for a bariatric cot. Flooring structures not meeting this requirement will not be accepted by this department.

**S. DRIVE SHAFT GUARD**

A .50" formed steel rod drive shaft loop or guard shall be installed just behind front U joint and center U joint. This is designed to prevent the drive shaft from creating a dangerous situation such as hitting the ground or whipping in the event of a universal joint failure. The drive shaft loop shall be welded to non-critical chassis frame components.

**T. DRIP RAILS**

There shall be an integral drip rail formed into the upper body perimeter extrusion. Over each compartment and entrance door there shall be an aluminum drip rail provided that will have drain points

at each end. 3M double-back tape will be applied to the back of each drip rail so it can be secured to the box above each compartment. These drip rails shall be shipped load loose and shall be not installed at the factory. The drip rails will be installed by the end user. Due to the close proximity, the upper body drip rail shall serve as the drip rail for all full height exterior compartment doors.

**U. CERTIFIED WELDING PERSONNEL**

To assure that the specified vehicle meets the letter, as well as the intent of this specification, welding of body structures, chassis attachment points, doors, any aluminum or stainless steel components or attachments shall be performed by or directly supervised by personnel Certified by the American Welding Society (AWS). Those individuals shall have proof of current certification and shall make such proof available to the department upon reasonable demand.

**V. WELDING TECHNIQUES, MATERIALS AND EQUIPMENT**

To meet this specification, welding operations shall be performed with certain specific techniques, materials and equipment. All welds shall be laid in the vertical-up direction to achieve as close as possible to one hundred (100%) percent penetration of joined materials. Welds laid in the vertical-down direction cannot achieve the required level of penetration. To assist in the dissipation of heat from a weld site joining two flat panels, a heat fence paste shall be applied according to the stated requirements of the manufacturer of the substance. The purpose of the heat fence is to efficiently disperse the heat created by the welding process and limit the amount of deformity produced in the joined materials.

All Metal Inert Gas (MIG) welding operations shall employ welding machines commonly known as “pulse” welders. Inherent in the operation of this type welding machine is that the heat generated by welding is significantly reduced, thus reducing deformity in the materials being joined. Welding wire used for MIG welding operations shall be #5356 wire.

Tungsten Inert Gas (TIG) welding with #4043 rod shall be employed to perform finish welding operations on any weld that is visible or unpainted; i.e. aluminum diamond plate.

**W. REMOUNTING MODULAR BOX ONTO A NEW CHASSIS**

The County will be remounting the module box onto a new chassis as part of its life-extending program. Proposers must state in their proposal whether it will stand behind its structural, paint, electrical and other applicable warranties after the remount is complete.

**3.10.7 BODY MOUNTING**

**A. CAB CONNECTION**

Bolting shall be accomplished by a minimum of twenty-five (25) .25” stainless steel Grade 8 bolts with lock washers. Proper care shall be exhibited in the installation of the neoprene gasket between the cab flange and the body to prevent the contact of dissimilar metals or pinching of the gasket.

**B. BODY MOUNTING**

The outside dimension, across the frame rails on this chassis is forty-two inches. Ford provides ten factory punched one and one-half inch diameter mounting holes in the frame. The aftermarket provider shall drill (no heat cutting) two additional holes within seven inches of the end of the OEM frame. Outrigger mounts on this chassis are not acceptable. Outriggers are not necessary and restrict compartment depth. Each mount shall accommodate a rubber/neoprene vibration isolator and support for the body's mounting sill. All mounting sills shall be made of one inch thick by three inch wide solid aluminum flat bar. A grade L-9 seven sixteenth inch diameter by four inch long hex-head bolt shall be used to bolt the sill down at each isolator site. This body-mounting configuration shall not prevent the vehicle from complying with the floor loading height requirement of KKK-A-1822F for the specified type

of emergency medical vehicle.

**C. HEAT SHIELDS**

To further insulate and protect the patient compartment the ambulance manufacturer shall install 18 gauge galvanized steel below the subfloor material to act as a heat shield. An 18 gauge galvanized steel sheet, with waterproof insulation laminated to it, shall be installed directly to the bottom of the floor tubes. This will create a sandwich style construction to further insulate the patient floor in the area of the muffler and exhaust system.

**D. VAPOR BARRIER**

To further insulate and protect the patient compartment an aluminum vapor barrier shall be installed. A .063 aluminum sheet shall be installed directly between the flooring and the 1.5" x 3" floor tubes. This will create a sandwich style construction to further insulate the patient floor in the area of the muffler and exhaust system.

**E. FENDER INSULATORS**

An additional sound deadening insulator shall be provided and installed on top of the wheel well liner. This layered rubber and aluminum material shall diminish the effects of noise created by road debris and provide additional thermal insulation for the patient compartment.

**F. FLOOR INSULATOR**

An additional sound deadening and thermal insulator shall be provided and installed between the .75" plywood floor and the .063" aluminum vapor barrier. It shall be a flash patch liner and shall provide extra sound deadening from road noise.

**3.10.8 ENTRY DOORS**

**A. GENERAL REQUIREMENTS**

All entry doors skins shall be constructed of a single piece of .090 thick, 5052-H32 aluminum sheet formed on all four sides. No welded seams are allowed, only one piece formed corners. The formed edges shall not have elongation cracks due to forming and shall maintain material thickness uniformly over the entire sheet. The formed edges uniformly round off seamless for better paint adhesion and aesthetic appeal that does not require cutting and welding in the corners.

The door skin shall be bonded to the frame assembly with an adhesive sealant in addition to intermittent welding. For entry doors: Additional, horizontal or horizontal/vertical structure shall be added to maintain door skin flatness as well as penetration resistance in the event of a collision. The horizontal members are extruded J-channel, 0.150" thick. A minimum of two (2) horizontal members shall be welded in. A vertically oriented 0.150" thick formed hat-channel shall be welded to the webs of both horizontal channels for additional buckling resistance.

The door frame extrusion shall be cut 45 degree on each corner. Each of the four corners shall incorporate a keyway and spline that is designed to drive into each corner and maintain a perfect 90 degree angle prior to welding. The door castings shall include gusset plates for additional support for the door construction. The door frame shall also incorporate a clearance way for UNF threaded blind fasteners for the door panels. The door panel shall not rest on the body of the blind fasteners.

The door frame shall reinforce the perimeter of the skin pan. The extrusion shall incorporate a T-slot to receive an extruded, hollow, dual durometer closed cell UV protected TPV gaskets with



relief holes for even compression for a proper and complete seal from the door to the door jamb. The gasket corners shall be welded without using adhesives for bonding. The door frame extrusion shall also add torsion resistance to the door assembly.

The door jamb shall accommodate rigid fastening of compartment door hinges. The jamb shall include a hollow cell that shall conceal wiring for the non-mechanical door switch. The door jamb frame shall be cut 45 degree on each corner from the door edge corner, each of the four corners shall consist of a keyway and spline that is designed to drive into each corner and maintain a perfect 90 degree angle prior to welding. Additionally, the jamb shall be continuously MIG welded on the inside and the outside corners. *A seamless door jamb exterior is required to minimize corrosion - extruded type door jambs do not meet this specification. The skin shall completely conceal the door-jamb from view. "No Exterior Door Extrusions Allowed".*

Module entry doors shall have 0.1875 inch thick mass loaded acoustical ethylene vinyl acetate material attached to the inside surface of the exterior skin to provide a noise reduction of 75%. There shall be 2 inch thick moisture resistant hydrophobic, micro-porous, polymeric substance adhered to the ethylene vinyl acetate material to provide added DB absorption and a minimum R rating of 11. The insulation shall be fitted tightly against the structural members to maximize R-value effectively. Gap spacing round each cell within the structure grid and the block foam shall not exceed 1/16". A layer of 0.250 inch thick foil encapsulated micro-cellular closed-cell polyethylene with an R rating of 7.75. There shall be a minimum air gap of 0.5 inch between the inner most foil surface and the doors interior surface materials. Insulation shall not interfere with door latch hardware. The total R value of the module entry doors must be greater than or equal to 12.

Module entry doors shall have 0.1875 inch thick mass loaded acoustical ethylene vinyl acetate material attached to the inside surface of the exterior skin to provide a noise reduction of 75%.

The door profile shall be a double pan form of 2.50" total thickness. Each door shall have the seal installed on the outer door pan flange to assure maximum sealing surface and to protect the rotary latching mechanism from environmental influences. The inner door pan flange shall be formed to provide a recess in which the inner door liner panel is seated. Inner door liner panels shall be affixed to the flange with stainless steel, #10-32 UNF machine screws threaded into aircraft quality blind fasteners. Each screw shall have a neoprene lock washer.

All exterior compartment and entry doors shall be marked or designated in some format by the manufacture denoting the specific size of that door. This shall assure the quick and exact replacement in the event of a damaged door needs replaced.

## **B. REAR PATIENT ENTRY DOORS**

The rear of the module shall be equipped with double, hinged patient compartment access doors. The doors shall be centered on the body and align with the patient compartment aisle space. The doors shall measure 46 3/4 inches wide by 60 5/8" high, jamb to jamb. Each door shall be constructed of a single piece of .090" 5052-H32 sheet aluminum. The use of extrusions for doorjamb or door frames is not allowed.

The door profile shall be a double pan form of 2.50" total thickness. Each door shall have the seal installed on the outer door pan flange to assure maximum sealing surface and to protect the rotary latching mechanism from environmental influences. The inner door pan flange shall be formed to provide a recess in which the inner door liner panel is seated.

The right main (leading) rear door shall have an FMVSS 206 tested Tri-Mark, 030-1875 bright chrome, free floating with locking exterior handle and the SAE J839 approved Nader pins. The interior Tri-Mark release mechanism shall be a 030-1425, power door locking assembly. The left (trailing) rear door shall have the non-locking Tri-Mark 030-1800 bright chrome, exterior assembly and a non-locking Tri-Mark 030-1425 bright chrome, interior assembly with the SAE J839 approved Nader pins.

The adjustable Nader pins with head flange mounted on the header and threshold doorjamb shall be installed in a way to diminish the possibility for clothing and equipment being snagged during entry or exit. When opened, the door shall activate the interior dome lights. (Also, the remote unlock signal from the keyless entry key FOB's shall turn on the patient compartment dome lights.)

The inside upper door panels shall be made of .080 aluminum diamond plate. The edges of the diamond plate shall be recessed into the door frame extrusion.

The center panels shall be upholstery over a smooth aluminum substrate and will match color and style of interior upholstery.

The inside lower door panels shall be made of .090 aluminum sheet. The edges of the plate shall be recessed into the door frame extrusion and shall have chevron style safety decals installed as shown in Section 8.

All panels shall be fastened to the door frame with stainless steel, #10-32 UNF machine screws threaded into aircraft quality blind fasteners. Each screw shall have a neoprene lock washer.

The rear entry door shall each be equipped with a three point, "L" Shaped 1 ¼ diameter, stainless steel with Yellow anti-microbial coating, handicap style grab handles to aid in door closure and entry assistance. The grab handle shall run horizontally, directly above the inside door latch and bend ninety degrees downward to create a banister (handrail) to aid in vehicle egress. The door handle shall be fastened directly to the horizontal door structure that is welded to the door assembly.

The rear entry doors will have a Kinequip red/white LED lighting mounted to the inner surface of the door so that it is visible when the door is opened to traffic. This lights shall be 1" tall and 1.75" long with 4 LED lights per fixture (2 red, 2 white) Location to be determined at pre-build meeting.

The rear entry doors shall be equipped with a door check (hold open) device. All vertically hinged doors in excess of 13" pass through width shall have a gas operated bi-directional spring shock door check. Door check brackets shall be drilled and tapped through a minimum of 3/8" material to preclude coming loose. When this door is opened, the door shall activate the interior dome lights.

### **C. CURB SIDE ENTRY DOOR**

The curbside access door shall be at least 73 13/16" high by 31" wide measured at the door jamb opening. It shall be constructed of a single piece of .090" 5052-H32 sheet aluminum. The use of extrusions for doorjambs or doorjambs is not allowed.

The curbside entry door shall be equipped with a door check (hold open) device. All vertically hinged doors in excess of 13" pass through width shall have a gas operated bi-directional spring shock door check. Door check brackets shall be drilled and tapped through a minimum of 3/8" material to preclude coming loose. When this door is opened, the door shall activate the interior dome lights.

The door profile shall be a double pan form of 2.50" total thickness. Each door shall have the seal installed on the outer door pan flange to assure maximum sealing surface and to protect the rotary latching mechanism from environmental influences. The inner door pan flange shall be formed to provide a recess in which the inner door liner panel is seated.

The side door shall have an FMVSS 206 tested Tri-Mark rotary latches with a Tri-Mark 030-1875 bright chrome, free floating, with locking exterior handles. The interior Tri-Mark release mechanism shall be a 030-1425, power door locking assembly. The adjustable Nader pins will be a SAE J839 with head a flange, mounted on the vertical doorjamb of all single, non-double doors. The Nader pin shall be installed in a way to diminish the possibility for clothing and equipment being snagged during entry or exit. When opened, the door shall activate the interior dome lights. Also, the remote unlock signal from the keyless entry key FOB's shall turn on the patient compartment dome lights. Both latches and handles shall meet AMD testing.

The inside upper door panel shall be made of .080 aluminum diamond plate.

The center panel shall be upholstery over a smooth aluminum substrate and will match color and style of interior upholstery.

The inside lower door panels shall be made of .090 aluminum sheet. The edges of the plate shall be recessed into the door frame extrusion and shall have chevron style safety decals installed as shown in Section 8.

All panels shall be fastened to the door frame with stainless steel, #10-32 UNF machine screws threaded into aircraft quality blind fasteners. Each screw shall have a stainless steel locking/star washer.

The curbside side entry door shall be equipped with a three point, "L" Shaped 1 ¼ diameter, stainless steel with Safety Yellow anti-microbial coating, handicap style grab handles to aid in door closure and entry assistance. The grab handle shall run horizontally, directly above the inside door latch and bend ninety degrees downward to create a banister (handrail) to aid in vehicle egress. The door handle shall be fastened directly to the horizontal door structure that is welded to the door assembly.

The curbside entry door will have a Kinequip red/white LED lighting mounted to the inner surface of the door so that it is visible when the door is opened to traffic. This lights shall be 1" tall and 1.75" long with 4 LED lights per fixture (2 red, 2 white) Location to be determined at pre-build meeting.

#### **D. ENTRY DOOR WINDOWS**

Both the curb side (Right) entry door and the two (2) rear entry doors shall be equipped with an automotive style window. The window will be recessed in a factory stamped opening. The window will be near flush and will have a nominal area of 320 square inches.

All three (3) windows shall have a special coating applied which allows for a default fogged effect. When minor current (12 volt) is applied the window shall transition to clear. The controlling of this fogged effect will be controlled through the LX-1. All windows will be fixed position. All glass shall be tinted safety glass.

#### **E. DOOR SEALS**

For optimum fit and closure, all compartment and patient entry doors shall have a T-slot to receive an extruded, hollow, dual durometer closed cell UV protected TPV gaskets with relief holes for even

compression for a proper and complete seal from the door to the door jamb. The gasket corners shall be welded without using adhesives for bonding.

### **3.10.9 ENTRY DOOR LATCHES, HINGES, AND HARDWARE**

#### **A. LATCHES**

The door latches shall meet FMVSS 206. All latches shall be two-stage, rotary- type. The latches shall be through bolted to the door frame extrusion. All entry doors shall have two rotary latches per door. To assure uniform latch timing and functional door reliability, only straight, one-quarter (1/4) inch diameter rods shall connect the latches to the handle. All double hung compartment doors shall have two rotary latches per door.

#### **B. HINGES**

All doors shall have stainless steel, continuous, piano hinge. The pin diameter shall be .250 and staked into place to prevent drifting out of the hinge leaf. The knuckle lengths shall be one inch. The hinge attachment bolts shall be one quarter inch diameter by one inch long stainless steel Type TT (Thread Rolling Screws) hex head bolts. All tapped holes for hinge bolts shall be treated with an anticorrosion compound prior to installation of each hinge bolt. Thread cutting screws are not acceptable. Each hinge leaf shall have a Mylar insulation strip (3M Scotch No 8411) between the leaf and the Jamb/Door

#### **C. NADER PINS**

All Nader pins shall be headed to prevent the door(s) from opening under impact. They shall be hex headed Grade-8 fully adjustable with a 5/16" thick knurled stainless steel retainer plate to keep the Nader pin from moving after adjusted. The opening in the door jamb extrusion shall be large enough to allow full adjustment with the Nader pin washer covering the hole.

#### **D. ENTRY DOOR HANDLES (EXTERIOR)**

All exterior entry doors shall have an FMVSS 206 tested Tri-Mark rotary latches with a Tri-Mark 030-1875 bright chrome, free floating, with locking exterior handles. Blind fasteners shall be used to fasten the handles to the door from the backside. Every exterior handle shall have an isolation gasket between the handle body and the door skin. All door skin surfaces shall be painted prior to installation of the handle hardware. All handles shall be locking type and keyed the same. All module door locks shall be mounted the same direction and lock/unlock in the same direction. Each latch must be capable of being locked independently with an exterior key lock. The locking mechanism shall be a Tri-Mark #1030 Double Cut Key. Trailing doors shall have non-locking handles, mounted on the outside of the door. Both latches and handles shall meet AMD testing.

#### **E. ENTRY DOOR HANDLES (INTERIOR)**

The interior handle shall be lever type. A Lock/Unlock lever shall be installed below the inside lever handle and be clearly marked Lock/Unlock. The inner chrome plated handle shall have a black powder coated cast aluminum bezel for strength. There shall be no plastic parts utilized in this installation. The module entry doors shall have integrated electric door lock activation switches. The door lock switch shall be integrated into the entry door bezel.

#### **F. EMERGENCY INTERIOR LATCH RELEASE**

There shall be a latch at both the top and bottom interior of each patient access door. These shall be used should the door rods become unattached from either the handle or latch assembly. The mechanisms shall be connected directly to the Tri-Mark latch.

**G. REAR DOOR HOLD OPENS**

The rear door grabbers shall be chrome Austin Hardware AH1-DHB-GRB-4.5 / W gaskets and with the loop part mounted above the window on the door. Rear access doors shall open at least 150 degrees and mounted in the top of the door at the edge opposite the hinge. The door checks shall be 2 piece, heavy duty, cast aluminum, grabber type with gaskets. The door shall have a ½ round stock loop that plunges into a positive rubber/cast socket that is mounted on the body.

**H. POWER DOOR LOCK SYSTEM – ENTRY DOORS**

Each compartment and/or entry doors listed shall Lock or Unlock with a single depression of a momentary switch. Each door shall be fitted with a bidirectional, momentary electric solenoid (Tri-Mark) designed to operate a mechanical rod in a linear fashion. The rod shall mechanically interface with the door lock mechanism inside the door. All rod connections shall be designed for high cycle operation without mechanical disconnection. The battery compartment shall NOT have the power lock/unlock feature, but shall remain unlocked or locked with a key only. These door lock(s) shall be wired to activate with the OEM cab door locks and their switches in the cab and the remote keyless entry remote FOB's. The dome lights are cycled on with the unlock signal for a 5-minute timed period.

**3.10.10 FLOORING**

The floor of the module shall be 3/4" (19mm) thick 7-Ply, Formaldehyde free, exterior grade, A-C plywood. The glue line between the layers shall be phenolic based. The glue shall be of similar chemical make up to the phenolic glue used in Marine grade plywood, as designated by the A.P.A. (American Plywood Association). The substrate sheet shall be cut from a 60 inch wide by 144 inch long oversized sheet.

No substrate seams are allowed in high foot traffic areas. This means NO SEAMS are permitted within 132" of the rear access doors or near the side access door.

The sub floor shall be shielded from moisture. A forty (40) mil thick aluminum sub sheet shall be sealed to the floor structure with silicone sealant. Additional aluminum plates shall be intermittent welded between compartments, wheel well liners, step wells and fuel filler housings. All of the areas shall be thoroughly sealed from one to the other, creating a sealed patient cabin from the outside. Extrusion hollows shall be filled with expandable foam sealant to prevent fumes and moisture from entering.

The plywood flooring and the underlying .040" aluminum vapor barrier shall be attached to the structural floor tubes using 1.5"-8 square drive floor screws. This attachment shall be made at a minimum of six (6) points across each floor tube and the width of the patient compartment floor. All screw insertion sites and the front panel juncture shall be filled and sanded to provide a smooth, solid surface for the top covering

**3.10.11 FLOOR COVERING**

The floor covering shall be one piece throughout the patient cabin regardless of the body length. The flooring material shall be commercial grade, anti-skid sheet floor with diamond plate like impression on the surface. Floor application shall use a commercial grade contact adhesive recommended by the manufacturer. The one-piece patient cabin floor covering material shall run the full width of the aisle space plus roll up (3") three inches along the streetside base wall cabinet, curbside attendants area and the curbside rear cabinet (when applicable). The floor covering shall be Lonseal Lonplate II No 424 "Gun Metal" (Dark Gray). The flooring shall comply with ASTM F 970 (modified); in regard to static load bearing and D-2047 James Test for slip resistance.

### **3.10.11.1 THRESHOLD PLATES**

The rear threshold shall be made of 16 gauge stainless steel sheet. The threshold shall conceal the end of the vapor sheet, sub floor, and flooring the threshold shall mate to the top of the rear access door jamb and cover at least six inches of flooring. Installed over the entire stainless steel threshold shall be a safety yellow skid resistant coating that can withstand traffic and pre-hospital cleaning products. The threshold shall be completely sealed with a silicone caulk.

The curbside entry threshold shall be made of .100 aluminum plate and will cover at least 2-1/2" of the floor space from the rise of the stepwell. The threshold shall conceal the end of the vapor sheet, sub floor, and flooring. Installed over the entire threshold shall be a safety yellow skid resistant coating that can withstand traffic and pre-hospital cleaning products. The threshold shall be completely sealed with a silicone caulk.

### **3.10.12 STEP WELL**

A curbside entry door shall feature a double step "step well" to assist in patient cabin egress. The step shall have a tread dimension of not less than 10 inches. The riser dimension shall not exceed nine and one-half inches, measured from the step tread to the floor of the patient cabin. A right angled trim, made of bright aluminum diamond plate, shall be formed over the flooring material and wrap around the 3-sided perimeter of the step well. Step well material shall be 0.100 thick, polished aluminum diamond plate. The step well shall be illuminated with a 3" LED clear light. The step well and light shall meet or exceed the current revision of Federal specification KKK-A-1822F.

The center step in this step well will be constructed as a storage area. The step tread portion will be hinged with a continuous stainless hinge where this step tread meets the next steps riser. A latching mechanism will be installed to keep this compartment tightly closed. The latch will be installed on the front of the tread, where it overlaps the previous steps riser. The compartment will also be sealed around the door opening to prevent dirt, debris or fluids from getting inside. This storage compartment floor will be formed of .125 aluminum sheet. The interior walls and backs will be constructed of .100 polished aluminum diamond plate.

A drain hole will be provided on the bottom of the compartments. The hole will be baffled to prevent splash water from entering the compartment.

### **3.10.13 WHEEL HOUSINGS**

Wheel housings shall include aluminum liners between the body wheel housings and the wheels extending over the top of the tires to the bottom of the body skirting. Module manufacturers' standard wheel housings shall be acceptable with rounded wheel well inner liners. Wheel housings shall be rust proofed or undercoated. Flash Patch sound deadening installed over wheel housing inner liners and over heat shield.

### **3.10.14 BULKHEAD, PATIENT/DRIVER CABIN**

A permanent aluminum partition shall be installed between the driver's cabin and the patient cabin. The partition shall be through bolted through cab extension structure. The structure shall be integrated into the front section of the module body. The patient compartment side of the partition shall be covered with .25" plywood with a minimum 45 mil laminate (Wilsonart laminate, Dove Gray color, Matte Finish). The cab side of the partition shall be covered with vinyl padded upholstery of a color that matches with the cab interior colors.

#### **3.10.14.1 PARTITION DOOR**

The door opening shall be at least 18" wide x 46" high and shall provide an aisle between the compartments. The door will slide on parallel extruded aluminum tracks, behind the passenger's seat in the cab. The door shall be fastened to a glide plate featuring nylon wheels specifically designed for the track. An upper and lower track is required. The door substrate shall be (3/4") laminated and will be finished in 45 mil Wilsonart laminate, Dove Gray color, Matte Finish. The door shall be fitted with a sliding polycarbonate window assembly with a minimum see through area of 150 square inches. An adjustable tension, brass bodied CATCH will hold the door OPEN and a slam action LATCH to hold the door closed. The latch shall be installed on the cab side of the door.

#### **3.10.14.2 FLUID DAM**

An L-shaped fluid dam made of stainless steel approximately 1" by .75" shall be provided to the rear of the partition door at the cab/module junction on the floor that is completely sealed to prevent body fluids from coming into contact with the cab flooring.

#### **3.10.15 MODULE INSULATION & SOUND DEADENING**

The underside of the curbside step well shall be insulated between the structures with urethane froth insulation and then the underside shall be undercoated to protect the insulation from weather elements.

The walls and ceiling shall have minimum of 1 inch thick closed- porous polymeric substance with a minimum R rating of 4. The insulation shall be fitted tightly against the structural members to maximize R-value effectively. Gap spacing around each cell within the structure grid and the block foam shall not exceed 1/16". A layer of 0.250 inch thick foil encapsulated micro-cellular closed-cell polyethylene with a minimum R rating of 7.75. The material must pass FMVSS 302 testing. There shall be a minimum air gap of 0.5 inch between the inner most foil surface and the interior surface materials. The total R value of the walls and ceiling must be greater than or equal to 11.75

All doors and interior walls shall be insulated with a premier insulation that will both offer sound/acoustical and HVAC characteristics for the patient area of the ambulance. This will provide a sound, air and moisture barrier by blocking airborne noise from entering the vehicle through open passages. This will also work as damper to reducing the vibration of each surface and minimizing the transfer of noise between the surfaces and the cabin interior. This will also provide a thermal barrier which enhances the climate control in the vehicle. It is used as a moisture barrier within doors to protect electrical passages and gives a solid feel by filing gaps between panels.

#### **3.10.16 MODULE FLOOR INSULATION**

The floor shall have 0.5 inch thick mass loaded acoustical (XPS) extruded polystyrene foam composite attached to the inside floor surface to provide a noise reduction of 75%. The total R value of the floor must be greater than or equal to 4.5 to 5.0 per inch.

#### **3.10.17 DOOR INSULATION**

Module doors shall have 0.1875 inch thick mass loaded acoustical ethylene vinyl acetate material attached to the inside surface of the exterior skin to provide a noise reduction of 75%. There shall be 2 inch thick moisture resistant hydrophobic, micro-porous, polymeric substance adhered to the ethylene vinyl acetate material to provide added DB absorption and a minimum R rating of 11. The insulation shall be fitted tightly against the structural members to maximize R-value effectively. Gap spacing round each cell within the structure grid and the block foam shall not exceed 1/16". A layer of 0.250 inch thick foil encapsulated micro-cellular closed-cell polyethylene with an R rating of 7.75. There shall be a minimum air gap of 0.5 inch between the inner most foil surface and the doors interior surface materials. Insulation shall not interfere with door latch hardware. The total R value of the module entry

doors must be greater than or equal to 12

### **3.10.18 INTERIOR SURFACE AND CONSTRUCTION**

#### **A. MATERIAL AND COLORS**

The interior cabinets and components shall be constructed of Formaldehyde free, exterior grade, A-A plywood. The glue line between the layers shall be phenolic based. The glue shall be of similar chemical make up to the phenolic glue used in Marine grade plywood, as designated by the A.P.A. (American Plywood Association). The exposed layers shall be hard wood on both sides of the sheet. The layers shall be 99% void free. Cabinet cases shall be made from at least (1/2) thick, 5-ply plywood. Bench lids and doors shall be made from at least (3/4) thick, 7-ply plywood.

Cabinet interior shall be laminated with white colored, high impact, abrasion resistant laminate. The contact adhesive shall be a high bond contact adhesive, specifically designed to bond plywood to laminate. The laminate shall be at least 28 mills thick.

Cabinet exterior shall be a high impact, phenolic backed, high impact, and abrasion resistant laminate. The laminate shall be at least 45 mills thick. There will be no exposed splicing or "piecing" of laminate material on cabinet interiors, fascia's or doors. All cabinet and door fronts will be covered in a single piece of laminate. This material as well as all interior components shall meet or exceed FMVSS 302 (Burn rate of interior components). Color selection shall be Wilsonart Dove Gray, matte finished (D92-60).

The headliner shall be constructed of a durable, high-gloss white, plasticized Lionite, and backed with a non-rigid plywood substrate material. The headliner shall be securely affixed to the roof bows and to the .090" aluminum accessory plate welded to the roof structure. The full length center light rail assembly shall be made removable for access to any wiring harness and antenna bases. Forward and aft of the center light rail assembly shall have a removable padded vinyl covers for ceiling access, color to match interior color.

The polycarbonate throughout the vehicle shall be transparent with a gray medium tint. All Polycarbonate shall be shatter proof and scratch resistant. All sliding doors and doors with view windows (I/O Cabinet) shall be at least three-sixteenths of one inch thick (3/16", 0.1875"). All solid polycarbonate doors that are hinged on self-closing hinges shall be three-eighths of one inch thick (3/8", 0.375"). The edges of all doors shall be worked and burned smooth.

#### **B. CABINET CONSTRUCTION**

The manufacturer must perform and provide all static and crash testing performed with supporting data on manufacturer's interior cabinets.

To maximize fastener bite, cabinet substrate parts shall be stapled with pneumatic fired equipment. The length of the fastener shall be at least 2.25 times the thickness of the material being pierced through. In addition to staples, the entire cabinet assembly must be screwed together with a minimum #8 screw size and a length not less than 2.25 times the thickness of the pierced substrate. Screw heads shall be countersink type and driven flush.

Reinforcement cleats shall be bonded to the inside corners where the backside of the face of the cabinet meets the case of the cabinet. The glue used shall be yellow colored water proof resin type.

All cabinetry interior seams shall be sealed to protect the cabinet material from seepage of spilled liquids. All interior materials, cabinetry, vinyl, laminates and foam shall meet or exceed FMVSS 302, Flammability



## of Interior Materials

Mitered joints throughout the interior conversion shall have a gap-less, hairline fit. Sliding polycarbonate door assemblies shall be scratch free and all edges shall be smooth and free of saw marks and sharp edges. Cabinet to cabinet joints shall not require more than 7/32 diameter welting to create a finished/well-fit look. Cabinets shall fit tightly against the ceiling as well. Doors and drawers shall fit the opening. When specified, all flush fitting doors shall have an even gapping between doors to openings. All doors shall open and close bind free. Drawers shall slide in and out freely, without drag. All drawers shall be mounted on side mounted, full extension drawer slides, rated no less than 75 pounds per pair. All hinged wood core doors shall have positive latches. Additionally, high traffic, high cycle doors shall have adjustable tension, brass bodied catches. All hinged polycarbonate doors shall have adjustable tension, brass bodied catches.

All trim throughout the interior conversion shall be anodized aluminum or formed stainless steel. All exposed corners or radiuses within the patient compartment shall have Wise Soft Touch Padding Material. Rounded corners shall be at least .250 inch radius. Additionally, rounded corners shall not compromise maximum cabinet assembly strength. The trim shall be bonded with a high strength adhesive.

The shelves and the supporting structure must be .75" lightweight Luan plywood material and laminated with a minimum of .028" plastic material on both sides. Non-supportive partitions shall be .50" lightweight Luan plywood material and laminated with a minimum of .028" plastic on both sides. All cabinetry will be sealed and molded to the floor with bright-anodized aluminum molding. Cabinet shelves to be fitted with aluminum front edge retainer lip. All interior cabinet shelves must be mounted on mini "C" track adjustors, and all shelves must have front edge retainer lips to secure equipment storage.

### **C. DAY BRIGHT LIGHTING**

The interior of the cabinets noted below shall be illuminated with LED rope lighting and shall be recessed into the backside of the cabinet perimeter aluminum tracking. The lights must be in the front of the cabinet shining towards the backside of the cabinet in order to see what is in the cabinet without the light being blocked by the components stored in the cabinet. The idea is to illuminate the interior of the cabinet and not to shine outward toward the personnel looking inside the cabinet. There shall be a switch in the patient compartment LX-1 display to turn the light(s) on and off as desired by the crew.

### **D. CABINET DOORS**

Sliding polycarbonate doors shall hereinafter be identified as polycarbonate. Unless specified otherwise, all cabinets along the street and curb side of the vehicle shall have a mitered framed, sliding transparent polycarbonate door assembly. The polycarbonate shall be at least 3/16 inch thick. Each door shall be fitted with a full length, extruded aluminum door handle. The door pull extrusion shall also add bend resistance to the door. The door track/Frame extrusion shall incorporate a flocked natural rubber track insert to prevent the doors from sliding free during transit. The corners of the assembly shall have drive-in corner spline. Each spline shall be riveted into place. All extrusions shall be anodized.

Hinged polycarbonate doors shall hereinafter be identified as polycarbonate. The polycarbonate shall be at least 3/8 inch thick. The desired thickness shall be noted within this specification at each door location. The door orientation, hinge style and latch shall also be noted at each door location as well. The door edges shall be rounded and smooth since it will be the finished edge that will be visible.

When a solid hinged door is specified, a 3/4" (19mm) thick door shall be supplied on the cabinet. The substrate shall be 7-ply, A-A (Cabinet/Marine grade), hardwood plywood. The door shall be flush fitted

to the opening and have uniform gap spacing around the perimeter of the door. The door shall be hung on a continuous, stainless steel piano hinge with mounting screws, spaced every two inches along the full length of the pre-punched hinge. The door shall be finished on both sides with white cabinet liner laminate on the inside and Wilsonart Dove Gray colored laminate as the cabinet fascia on the outside. All solid hinged doors will be designed in a showdown box or picture frame effect with a minimum of a 3-3/4" side styles/rails and a 5" top/bottom styles/rails. All solid hinged doors will have a piece of polycarbonate attached to the back side of the door opening to provide a window. All exposed wood edges on the solid hinged doors will have an aluminum "J" mold attached. The "J" mold will have mitered corners and all rough edges will be filed smooth.

**E. CABINET LINER**

The bottoms of all the cabinet, drawers and shelves of the cabinets in this specification shall all be lined with a rubberized matting material. The top surface of the matting material shall be non-skid with a pebble finish. The material shall not be adhered in place so it is removable to clean the underlying surface of the cabinet(s). The material shall be trimmed to fit without bumps or gaps. All the material shall be one piece in each location.

**F. DIVIDERS, HINGES, TRIM, AND LATCHES**

When specified, storage cabinets shall be divided into sections and shelves shall be adjustable; sliding doors shall operate in friction holding, felt lined tracks; hinged doors shall be fitted with Non locking Southco positive latching devices. All cabinets shall be trimmed in attractive bright finish trim on all four sides of each opening.

**3.10.19 STREETSIDE SAFETY NET**

A safety net shall be affixed to the forward end and rear end of the technician (CPR) seat on the streetside between the forward and rearward cabinets and the action shelf. Each net will incorporate seven (7) horizontal and three (3) vertical straps made of heavy duty 2" wide safety yellow seat belt material sewn with heavy duty stitching at all intersections. It shall be mounted into the ceiling at the top and on each action shelf area at the bottom on each side of the technician seat into .25" backer plates. The net shall be easily removable with a quick release system.

**3.11 STORAGE COMPARTMENTS**

**3.11.1 INTERIOR STOWAGE ACCOMMODATIONS**

**A. GENERAL REQUIREMENTS**

The interior of the patient compartment shall provide enclosed storage cabinets, compartment space, drawers and shelf space, which shall be conveniently located for medical supplies, devices and installed systems as applicable for the service intended. Enclosed compartments and spaces shall be located at or on the partition, sidewalls, overhead and bulkheads.

**B. TECHNICIAN SEAT BASE**

A technician (CPR) seat base located between the streetside rear and forward cabinets and shall align with the primary patient's abdomen. The seat shall be at least twenty four (24") inches wide and normal squad bench seat height and have rounded corners. The CPR side seat shall feature a padded, fixed back rest with chamfered upper corners Upholstered seat pads shall be located within the seat area for the seat, back, both arms and hips. The CPR seat shall have the P-6 advanced restraint vehicle mounted 6-point restraint system installed.

The under CPR seat stowage cabinet shall add at least 1.5 cubic feet of interior stowage accommodations described in Federal specification KKK-A-1822F. The CPR seat base lid shall be installed with butt style, hinges. The hinges shall be through bolted for longevity of the vehicle. There shall be a minimum of two hinges installed. The CPR seat lid shall lock in place when in the lowered position with a positive-style latch.

A four (4) inch wide upholstery covered and padded arm rest shall be installed on the action area side of the CPR seat. The arm rest shall create a 3/4" to 1" lip on the leading edge of the action/telemetry area

**C. OVERHEAD OF TECHNICIAN SEAT CABINETS**

A single cabinet shall be located above the technician (CPR) seat. Cabinet shall incorporate a single flip-up style polycarbonate front with self-closing hinges and a recessed chrome latch. It shall measure 25" wide X 6" high X 8" deep. This cabinet shall not have a shelf or divider and will be padded on the bottom side.

**D. STREETSIDE FORWARD UPPER CABINETS**

Forward of the technician (CPR) seat shall be a row of upper cabinets located above the primary action area. This multipurpose cabinet interior shall be finished in high impact, white colored laminate. The cabinet shall be ergonomically angled and padded toward the CPR seat inside measurements shall be no less than 46" wide x 16" high x at least 17" deep of usable space. The uppermost cabinets shall have sliding polycarbonate doors with full length handles. Additionally the entire framed assembly shall hinge upward 90 degrees to provide 100% access for the purpose of restocking the cabinet. The assembly shall be supported by a gas piston spring on each side and latched with two positive, slam action latches that are blind mounted behind each end of the window frame.

This cabinet area shall be made up of vertical and horizontal dividers. There will be two solid horizontal dividers within this cabinet, dividing the cabinet space into three equally spaced areas. Both horizontal dividing shelves, along with the ceiling and floor of this cabinet shall have a series of equally spaced notches or dado cuts approximately 3/16" wide and spaced approximately 3/4" apart. This notches or dado cuts will provide vertical 3/16" polycarbonate dividers to be placed inside the cabinet in desired locations to subdivide the cabinet into desired storage areas. A vertical bulkhead may need to be installed in the center of this cabinet to provide stability for horizontal shelves. Exact dimensions of each divided compartment/area will be determined at a pre-construction meeting.

This cabinet shall also be backlit with a series of LED rope lighting to illuminate the interior of the cabinet when the entire framed door assembly is opened for restocking purposes. The cabinet will also be padded on the side that faces the CPR seat.

**E. ACTION AREA**

The action area is a work surface located on the forward end of the Base Wall Cabinet and adjacent to the attendant seat and will provide a work surface for attendants use. The work surface shall be at least 5.5 square feet. The work area height shall be 24 inches to 29 inches. The work surface shall have a three quarter inch (3/4") high lip. The following list of items is required in the Action Area;

1. Two (2) Oxygen Ports
2. One (1) Oxygen Emergency Bypass Valve
3. One (1) Suction Canister mounting, recessed into wall above action counter with suction/aspiration outlet.
4. One (1) Vacuum Regulator
5. Two (2) 12 Volt Outlets

- 6. One (1) Double 125 VAC Receptacle
- 7. One (1) Multiplexing System Touch Screen
- 8. One (1) LED strip light mounted under the upper cabinet

**F. ACTION AREA COUNTER SURFACE**

The action area counter surface shall be made from one half inch thick solid surfacing material. This material shall be installed by certified personnel trained on the specific brand of solid surfacing material being installed. The successful bidder shall disclose the make of the solid surfacing material they are providing.

The proposed solid surfacing material shall meet the following minimum technical specifications:

<b>TEST</b>	<b>TEST VALUE</b>	<b>TEST METHOD</b>
Stain Resistance:	24	ANSI 5.2.1
Barcol Hardness	60-62	Barcol Impresser
Flexural Strength, PSI	8250	ASTM D-790
Flexural Modulus, PSI x 10	1.41	ASTM D-790
Dart Impact, 2lb dart	No Fracture	30" Drop
Fire Rating	Class A / Class 1	ASTM E-84
Sample Thickness	0.785 inches	
Color Fastness	Pass	ANSI Z124.3-1986
	The samples shall show no significant change in color after 200 hours of exposure.	
Wear ability	Pass	ANSI Z124.3-1986
	After completion of 10,000 scrub cycles, no wear through shall be observed.	
Clean ability	Pass	ANSI Z124.3-1986
	The average absolute loss of white light reflectance after application and removal of standard dirt with liquid detergent shall be 0.0%. No additional cleaning shall be necessary.	
Chemical Resistance	Pass	ANSI Z124.3-1986

Solid Surface material will be a composite of high tech resins and natural minerals. The material shall be 100% solid meaning the surface color goes all the way through. This material shall be chemically engineered to resist stains, nicks and scratches. The material shall be nonporous and shall not support the growth of mold mildew and bacteria.

SOLID SURFACE COLOR: The color of the solid surface material specified above shall be Midnight Mélange 9091ML

**G. ACTION AREA CABINET**

A cabinet shall be constructed and mounted in the forward action area, below the street side upper cabinets. The cabinet shall be 16" tall X 12" wide X 9" deep, with 4" depth of this cabinet recessed into street side wall/bulkhead. It will have a 5/16" polycarbonate door with self-closing hinges and a recessed chrome pull handle Cabinet will have padded corners on outer edges of cabinet.

**H. OXYGEN ACCESS DOOR**

A Polycarbonate door shall be installed in the bulkhead, between the Action Area and the main exterior oxygen compartment for access to the on-board M cylinder oxygen bottle. This will be a polycarbonate door with self-closing hinges and a chrome recessed pull handle and will cover the 6 inch wide, 12 inch tall access opening.

**I. BIOHAZARDOUS SHARPS STORAGE**

This cabinet will also have a biohazard sharps disposal located on the patient area of this cabinet. The biohazard sharps container shall accommodate a Sentinel #125-020, 3 quart sharps container with rotating cylinder. The sharps container shall be mounted in the portion of the cabinet that faces the patient area. The sharps container will be mounted on a tilt out compartment with a positive latching mechanism and will allow for removal and replacement. When this compartment is closed, it will allow the sharps container to fit flush against the cabinet and not protrude into the patient area. The compartment will keep the sharps container secure in the event of an accident or rollover.

**J. STREET SIDE REAR BASE CABINETS**

The base wall cabinet is located on the Street side (Left side) of the patient cabin. The overall height of the Base Wall Cabinet shall be approximately 75% of the overall head room. This cabinet shall be built in ONE piece. The laminate along the fascia shall be ONE piece on single color laminate selections.

**K. STREETSIDE REARWARD UPPER CABINETS**

Extending from the streetside rear of module and ergonomically angled and padded toward the CPR seat shall be the maximum amount of cabinets possible consistent with exterior compartment configuration. This cabinet shall accommodate a power air exhaust blower with a removable service panel. This multipurpose cabinet interior shall be finished in high impact, white colored laminate, as stated in the cabinet construction specification.

This uppermost cabinet shall have sliding polycarbonate doors. Additionally the entire framed assembly shall hinge upward 90 degrees to provide 100% access for the purpose of restocking the cabinet. The assembly shall be supported by a gas piston spring on each side and latched with two positive, slam action latches that are blind mounted behind each end of the window frame.

This cabinet shall be equipped with non-incremental, aluminum, C-shaped shelf standards. A shelf shall be supplied in the cabinet. Each shelf shall be white anti-microbial coated. The shelf shall be secured to four shelf clips an anodized aluminum angle shall be securely fastened to the front edge of the shelf. The vertical leg of the angle shall provide a lip along the front edge.

This cabinet shall also be backlit with a series of LED rope lighting built into the perimeter of the restocking door and will illuminate the interior of the cabinet when the entire framed door assembly is opened for restocking purposes.

The cabinet inside measurements shall be no less than 45" wide x 21" high x at least 19" deep of usable space. All cabinets on the streetside rear shall have an adjustable shelf installed with an outer lip of .50" for a total depth of 18" inclusive. Rear cabinets shall have vertical dividers located at approximately midpoint. Dividers shall not impede the Polycarbonate doors from opening the entire length of the undivided cabinet.

**L. STREETSIDE LOWER REAR CABINETS**

Extending from the streetside rear of module and to CPR seat shall be the maximum amount of cabinets possible consistent with exterior compartment configuration. This multipurpose cabinet interior shall be finished in high impact, white colored laminate, as stated in the cabinet construction specification.

This cabinet shall have sliding polycarbonate doors. Additionally the entire framed assembly shall hinge upward 90 degrees to provide 100% access for the purpose of restocking the cabinet. The assembly shall be supported by a gas piston spring on each side and latched with two positive, slam action latches

that are blind mounted behind each end of the window frame.

This cabinet shall be equipped with non-incremental, aluminum, C-shaped shelf standards. A shelf shall be supplied in the cabinet. Each shelf shall be white anti-microbial coated. The shelf shall be secured to four shelf clips an anodized aluminum angle shall be securely fastened to the front edge of the shelf. The vertical leg of the angle shall provide a lip along the front edge.

This cabinet shall also be backlit with a series of LED rope lighting built into the restocking door and will illuminate the interior of the cabinet when the entire framed door assembly is opened for restocking purposes or turned on with the Multiplexing system.

The cabinet inside measurements shall be no less than 55" wide x 21" high x at least 19" deep of usable space. Rear cabinets shall have vertical dividers located at approximately midpoint. Dividers shall not impede the Polycarbonate doors from opening the entire length of the undivided cabinet.

**M. IV FLUID WARMER CABINET**

A Smithworks Medical Floor Mount IV Warmer shall be provided and a cabinet shall be constructed to house this IV Warmer. Located below the streetside lower rear cabinets will be a compartment large enough to accommodate this IV Warmer and will be large enough to be able to remove or service the IV Warmer. The cabinet shall be fully insulated, with the exception of the access door. The front of the compartment will have a tilt down lid constructed of ¾" plywood and will be laminated to match the cabinet color. The outer edges of the door will be trimmed out with aluminum J molding and will be hinged horizontally across the bottom with a continuous stainless steel hinge. The door will have a recessed latch installed and a safety cable to keep the door from opening past 60 degrees.

**N. BIOHAZARDOUS WASTE STORAGE**

An ADP biohazardous waste compartment shall be built into the street side lower rear cabinets, close to the rear of the module. The access opening shall be 6" tall X 6" wide and will have a red colored ¼" polycarbonate access door mounted to on the inside of the opening where it pushes open into the outside compartment. The polycarbonate access door will be mounted on spring mounted hinges, mounted at the top of the door so door will securely close after each use. The opening of the access will be trimmed in aluminum J molding and will have no raw edges exposed. The waste receptacle will be located inside the rear most streetside outside compartment and will need to accessed from this location. The waste receptacle will be secured in an aluminum enclosure made of the same diamond plate aluminum that the interior of the compartment is constructed of. The enclosure will be enclosed on all sides with an access door. The access door shall not open more than 90 degrees to prevent it from becoming lodged in or damaged if the exterior compartment door is closed. The access door with a positive latch. The waste receptacle will be a Kendall brand sharps container, model number 8990SA with lid and will be securely stored inside this compartment with L-shaped aluminum brackets that will keep the receptacle from moving, yet allow it to be removed easily for disposal. The County will provide a container to the winning bidder prior to construction to be used as a guide or template.

**O. REFRIGERATOR ABOVE ALS CABINET**

A cabinet opening approximately 26-1/2" wide x 12" high x 26-1/2" deep shall be located over the Inside/Outside (ALS) cabinet. This cabinet shall house a Mermaid MK18 S/S- 1.8 cubic foot, 12V heating/cooling unit. Mermaid shall be cool unit only with rear compressor and a top hinged door and a one inch (1") stainless steel flange running continuously on all four sides of the front of the refrigerator. The refrigerator shall be powered by seamless clean 12VDC, found in section 3.7.7.2.A. One (1) auxiliary 12V fan shall go behind the cooler as part of a ventilation system to move air through the cabinet and

help augment the cooler's ability to cool. The fan shall operate anytime the vehicle is plugged into the Kussmaul shore line or when vehicle is running. A 4" x 4" vent shall be installed on the inboard side between this cabinet and the HVAC space. The refrigerator condensation/defrost reservoir shall drain from the rear of the refrigerator, through the cabinetry, and expel to the bottom of the module body.

**P. REFRIGERATOR LOCK**

A CompX eLock 300 Series shall be installed on, or adjacent to the refrigerator above the ALS cabinet. The CompX eLock shall allow an audit trail reporting (last 15,000 access attempts) and up to 3,000 unique ID codes to be entered. The eLocks shall be able to be programmed to accept and read either EMS existing employee HID proximity identification cards or be set up for individual ID codes. The network function shall allow two-way (eLock and Lockview 4 software) communication on existing network systems either by 802.11g wireless or Ethernet connection. Additionally, temperature monitoring shall be made available with the cold storage version - with or without access control.

**Q. INSIDE/OUTSIDE CABINET (ALS)**

A cabinet approximately 54" high x 26" wide (forward/aft) x 34" deep (street/curb) and shall be bolted to the curbside of the patient compartment partition wall. The interior surfaces shall be white powder-coated anti-microbial finish. There shall be a dual set of wooden doors (2 each) running the full height of this compartment. The doors shall be approximately 55" tall and each door will be approximately 13" wide. The edges of the doors shall be contoured semi-round and smooth. The spacing between the doors shall be uniform and both doors shall be height aligned. Each door shall have a polycarbonate insert. The doors will be trimmed on the outer door edge and polycarbonate insert edge with aluminum J molding. Both doors will have a round Southco pull style chrome positive non-locking recessed latch. A small "preload" on the latch shall be imposed to prevent the door from rattling. Both doors will be mounted on a continuous stainless steel hinge.

All fixed and adjustable shelf surfaces shall be covered in Easy Grip material. All fixed and adjustable shelf lips shall be covered with anodized aluminum trim. All shelves shall have a 3/4" lip. All adjustable shelves will be on "C" channel style tracking system. This cabinet will have 2-3 adjustable shelves. The cabinet shall be finished with the same material as the other cabinets.

This cabinet shall have LED lighting provided for each shelf area. There will also be two (2) double 125 VAC receptacles and two (2) 12 volt outlets inside this cabinet.

The outer front left side of this cabinet shall be angled at a 45 degree angle, leading towards the hallway/passageway into the cab of the vehicle. In this area, space will be provided for a glove storage system. There will be four (4) equally divided areas with an approximate size of 11" tall X 5-1/2" wide X 3" deep inside measurements. The front of this storage area will be accessed with a single 3/8"-1/2" polycarbonate door. The door will have four (4) oval shaped openings to access each of the four compartments. These openings will be rounded over and finished smooth. The door will be mounted on a self-closing hinge system and will have two (2) round Southco pull style chrome positive recessed latches. The interior surface of this cabinet shall have a white powder-coated anti-microbial finish.

**R. BULKHEAD CABINET**

Behind the captain's (ALS) seat shall be a three (3) section cabinet. The cabinet will run from the floor to the Air Conditioner Evaporator Cabinet and will have access to the electrical and storage areas through the hallway/passageway that leads to the vehicle's cab. The cabinet interior shall be finished in high impact, white colored laminate, as stated in the cabinet construction specification.

The upper portion shall be used as part of an electrical distribution center. Access shall be from one door

facing inboard. A Southco Chrome non-locking positive latching recessed mechanisms shall be used for this door. Approximate size of this compartment is 42" high X 17" wide X 14" deep. A black 4" X 4" plastic louvered vent shall be supplied on the upper and lower portion of the solid door to provide for air flow and heat dissipation.

The lower section of the cabinet shall be used for general storage and have a drawer constructed for this area. The drawers shall slide in and out freely, without drag. The drawer shall be mounted on side mounted, full extension drawer slides, rated no less than 75 pounds per pair. Drawer shall be constructed of ½" – ¾" Cabinet grade plywood and the interior shall be finished in a high impact, white colored laminate. The drawer front will be constructed of ¾" plywood and will be laminated to match the cabinet color. The drawer front outer edges will be trimmed out with aluminum J molding. A Southco Chrome locking positive latching recessed mechanisms shall be used for this drawer. The space for this drawer shall run the full width and depth of the cabinet and the depth of the drawer will be 7" deep inside.

Hallway/passage area to the vehicle cab shall have a minimum space between Inside/Outside (ALS) cabinet and Bulkhead cabinet of 22".

#### **S. AIR CONDITIONING EVAPORATOR CABINET**

The patient cabin shall be equipped with a rear air conditioning and heat unit. The cabinet housing the unit shall be composite materials with Color Keyed laminate to the exterior and matte white to the interior as needed. The AC Unit is to be located above the bulkhead cabinet, behind the attendant's seat. The cabinet shall be padded on the bottom side that is exposed to the hallway/passage to the vehicles cab. The design shall provide adequate air return to meet or exceed the current revision of the Federal specification KKK-A-1822F.

#### **3.11.1.2 SEAT SAFETY BELTS AND ANCHORAGES**

Three (3) sets of Type 1, retractable seat belts shall be installed on the curbside wall. Anchor points for these belts are attachments through and to the .25" aluminum plate welded into the curbside wall structure. The retractors shall be automotive style with plastic housings. An additional set of three (3) female end seat belts shall be mounted into the front face of the attendants area cabinets for the purpose of securing a secondary patient on the curb side attendant's area. They shall be secured in the upright position when not in use. The seat belt components and anchor points shall meet the requirements of KKK-A-1822F and FMVSS

#### **3.11.1.3 CURB SIDE ATTENDANTS AREA**

In lieu of a standard Squad Bench, there shall be a custom set of cabinets at the head (forward) and foot (aft) end of what would be the squad bench area. A Technician Seat on a swivel base shall be provided in lieu of a squad bench. There will also be overhead storage cabinet along the full length of this area. A monitor mount for a Lifepak 15 shall be installed on the working surface of one cabinet. A telemetry cabinet area similar to what is provided on the street side Action Area will also be provided at this location. There will be a wall cabinet in the aft area of this attendants area, mounted on the forward facing (towards vehicle cab) bulkhead of the rear most curb side exterior storage compartment (spine board) This area will also maintain the ability to place a lay-down patient on a spine board and secure that patient with a retractable seat belt system.

#### **A. TECHNICIAN SEAT (CURB SIDE)**

A high-back captain ALS chair without armrest shall be located on the curb side of the patient care area, situated above the curb side wheel well (3.10.3.C). The flooring in this area will be a level plane and will not follow the contour of the wheel well housing. This seat will be a seamless vacuum formed vinyl with an enclosed retractable six (6) point seat belt system. The seat base shall be mounted on a WM10233 swivel base and be able to track forwards and backwards. The seat belt system shall be made to allow



the seated attendant to stand up if needed, but also will lock the seat belt system in place during an accident. The seat will also be able to have the backrest portion to fold and lay flat against the seat portion in the event a lay down patient is needed to occupy this space. The seat base shall be securely bolted through the module floor structure. The mounting hardware, seatbelt materials and configuration shall be in compliance with applicable FMVSS.

**B. CURB SIDE CABINETS ABOVE ATTENDANTS AREA**

A row of cabinets shall be installed above the attendants seating area, running the full length of the wall. These cabinets shall be Ferno InTraxx cabinets mounted on the Ferno InTraxx Track System. There shall be two (2) separate cabinets and each shall be approximately 8" tall by 10" deep by 32" wide. Both cabinets will mount separately and securely on the InTraxx Track System. No shelf shall be required for these cabinets. Cabinet shall incorporate a two (2) flip-up style door front with self-closing hinges and a recessed chrome Southco latch. Cabinet shall be fitted with head-pads similar as those used throughout the module.

**C. FORWARD LOWER CABINET**

A custom set of lower cabinets shall be constructed forward of the Technician Seat and stopping at curb side entry door. This cabinet will be constructed to the same standards as all the cabinets as outlined in 3.10.18 The cabinet dimensions will be approximately 24" to 29" tall X no more than 20" deep X 24" plus or minus wide. This cabinet will maintain a minimum patient area distance of 48" between curb side and street side cabinets. This cabinet will have a working counter surface matching the Action Area counter surface (3.11.1.F) and shall be made from one half inch thick solid surfacing material.

This cabinet will incorporate a SSCOR VX-2 Suction Unit with Charging/Retaining Bracket, both to be provided by the Ambulance Builder/Manufacturer. The Suction unit will be mounted on the forward facing wall, inside the curb side entry door step well, above the floor line of the module, so that it's easily accessible from the curb side entry door.

Just below the where the SSCOR VX-2 Suction Unit is located shall be a Waste Receptacle/Trash Can recessed into the cabinet surface. This will be situated in the step well of the curb side entry door, just above the steps. This area shall be able to accommodate a waste receptacle that is approximate in size to a 6 qt. Rubbermaid Wastebasket. The Waste Receptacle shall be on a tilt out holder, hinged at the bottom and secured tightly when closed. The Waste Receptacle shall remain accessible for waste when securely closed.

A safety net shall be affixed to the forward end of this cabinet, on the inside of the curbside entry/step well. This net will incorporate eight (8) horizontal and four (4) vertical straps made of heavy duty 2" wide safety yellow seat belt material sewn with heavy duty stitching at all intersections. It shall be mounted into the ceiling at the top and on each action shelf area at the bottom on each side of the forward lower cabinet into .25" backer plates. The net shall be easily removable with a quick release system.

This cabinet will have one (1) female end seat belt and shall be mounted into the front face of the attendant's area forward lower cabinet for the purpose of securing a secondary lay-down patient on the curb side attendant's area. The female seat belt shall be secured in the upright position when not in use and shall be recessed so it sits flush into the front of the cabinet facing the patient area. The seat belt components and anchor points shall meet the requirements of KKK-A-1822F and FMVSS

This cabinet will consist of two (2) drawers and will open into the patient area. The drawers shall slide in and out freely, without drag. The drawer shall be mounted on side mounted, full extension drawer slides, rated no less than 75 pounds per pair. Drawer shall be constructed from high grade aluminum to maximize the cabinet space and the interior shall be finished in a white powder-coated anti-microbial

finish. The drawer front will be constructed of  $\frac{3}{4}$ " plywood and will be laminated to match the cabinet color. The drawer front outer edges will be trimmed out with aluminum J molding. A Southco Chrome non-locking positive latching recessed mechanisms shall be used for this drawer. The space for this drawer shall run the full width and length of the cabinet and the depth of the drawer will be determined during a pre-build/construction meeting.

This cabinet will also have a biohazard sharps disposal located on the patient side of this cabinet. The biohazard sharps container shall accommodate a Sentinel #125-020, 3 quart sharps container with rotating cylinder. The sharps container shall be mounted in the portion of the cabinet that faces the patient area. The sharps container will be mounted on a tilt out compartment with a positive latching mechanism and will allow for removal and replacement. When this compartment is closed, it will allow the sharps container to fit flush against the cabinet and not protrude into the patient area. The compartment will keep the sharps container secure in the event of an accident or rollover.

The aft side of this cabinet on the attendant's seat side will have an access insert in the face of the cabinet to accommodate a Patient Care Reporting Tablet. This insert shall large enough to place a Panasonic Toughbook and will have a charging cord for the tablet inside the slot. The insert housing shall be constructed of a formed plastic material that is both durable and easily cleaned. The insert shall be constructed in the upper most portion of this cabinet, above the seat area of the attendant's seat, or just below the top surface area. The insert shall run at a downward angle from the face of the cabinet to keep the tablet from sliding out. There shall also be a safety strap to assist in securing the tablet in place in the event of an accident.

A Ferno InTraxx ITX-DWS-LP15 Defibrillator Wall and Surface Swivel Mount will be provided by the Ambulance Builder/Manufacturer. This Lifepak 15 mounting bracket will be mounted on the working surface area of the forward cabinet using a Ferno ITX-T-340-B Track System with matching ITX-EC End Caps and all necessary components for this system shall also be included. The Ferno InTraxx monitor bracket and track system will be mounted using the necessary structural support for supporting this system shall be included in the construction of this cabinet and it shall meet or exceed all specifications of KKK-A-1822F as amended.

**D. REWARD LOWER CABINET**

A custom set of lower cabinets shall be constructed aft of the Technician Seat, between the Technician Seat and the forward bulkhead of the rear most curb side exterior storage compartment (spine board). This cabinet will be constructed to the same standards as all the cabinets as outlined in 3.10.18 The cabinet dimensions will be approximately 24" to 29" tall (must be same height as forward cabinet) X no more than 20" deep X 24" plus or minus wide. This cabinet will maintain a minimum patient area distance of 48" between curb side and street side cabinets. This cabinet will have a working counter surface matching the Action Area counter surface (3.11.1.F) and shall be made from one half inch thick solid surfacing material.

This cabinet will have one (1) female end seat belt and shall be mounted into the front face of the attendant's area reward lower cabinet for the purpose of securing a secondary lay-down patient across the curb side attendant's area. The female seat belt shall be secured in the upright position when not in use and recessed so it sits flush into the front of the cabinet facing the patient area. The seat belt components and anchor points shall meet the requirements of KKK-A-1822F and FMVSS.

This cabinet will consist of three (3) drawers and will open into the patient area. The drawers shall slide in and out freely, without drag. The drawer shall be mounted on side mounted, full extension drawer slides, rated no less than 75 pounds per pair. Drawer shall be constructed from high grade aluminum to maximize the cabinet space and the interior shall be finished in a white powder-coated anti-microbial finish. The drawer front will be constructed of  $\frac{3}{4}$ " plywood and will be laminated to match the cabinet

color. The drawer front outer edges will be trimmed out with aluminum J molding. A Southco Chrome non-locking positive latching recessed mechanisms shall be used for these drawers. The space for these drawers shall run the full width and length of the cabinet. The two (2) lower drawers shall maintain a minimum inside finish drawer width (forward/aft) of 17", depth of 18" (curb/street) and 10-1/2" tall. The top drawer shall sit offset from the female seat belt mounted in the face of this cabinet. The top drawer shall maintain a minimum inside finish drawer width (forward/aft) of 12", depth of 18" (curb/street) and 7-1/2" tall.

Exact drawer sizes will be determined during a pre-build/construction meeting.

**E. REWARD UPPER BULKHEAD CABINET**

A cabinet shall be constructed on the forward facing bulkhead of the rear most curb side compartment, or the spine board compartment. This cabinet will face towards the front of the vehicle and will be used for the storage of medical supplies and medication.

The cabinet inside measurements shall be no less than 17" wide x 30" high x at least 12" deep of usable space. This cabinet shall have single hinged polycarbonate door front with self-closing hinges and a recessed chrome latch. The cabinet must be able to accommodate a Quantum Storage System Tray, number DG-92035, measuring 11" wide X 16-1/2" long X 3-1/2" tall. The tray must be able to be removed from the cabinet with the polycarbonate door is fully opened. This cabinet shall have two (2) adjustable shelves installed with an outer lip of .50" for a total depth of 11-1/2" inclusive. The cabinet depth shall extend into the spine board compartment approximately 8" and extend out, away from the spine board bulkhead approximately 4". The outer 4" of the cabinet surface that extends past the bulkhead shall be padded with upholstery type material on all sides and will match the color of interior upholstery.

This cabinet shall be equipped with non-incremental, aluminum, C-shaped shelf standards. Two (2) shelves shall be supplied in this cabinet. Each shelf shall be white anti-microbial coated. The shelf shall be secured to four shelf clips an anodized aluminum angle shall be securely fastened to the front edge of the shelf. Each shelf shall have an aluminum lip along the front edge to keep items from sliding off the shelf.

This cabinet shall also be backlit with a series of LED rope lighting built into the front perimeter of the cabinet, just inside the polycarbonate door.

Just below this cabinet and above the work surface of the lower cabinet shall be installed a high grade steel eye bolt. The purpose of this eye bolt is to secure one end of a spine board for a lay down patient. This eye bolt shall be secured through the bulkhead and through 1/2" aluminum plate that has been securely fastened into the structure of the spine board compartment. This eye bolt and mounting shall comply with all specifications of KKK-A-1822F as amended.

The exact location of this cabinet on the spine board compartment bulkhead and cabinet measurements will be determined at a pre-build/construction meeting.

**F. CURB SIDE TELEMETRY AREA**

Located just above the curb side forward cabinet, mounted on curb side wall, shall be an overhead telemetry area. This telemetry area will be located within close proximity to the attendant seat and will be ergonomically situated on an angle facing towards the attendant. The telemetry location will also be situated giving enough clearance for the Ferno Lifepak 15 Swivel Monitor Mount that will be mounted on top of the forward base cabinet. The following shall be incorporated into this telemetry area;

1. Two (2) Oxygen Ports
2. One (1) 12 Volt Outlets

3. One (1) Double 125 VAC Receptacle
4. One (1) LX-1 Multiplexing System Touch Screen
5. One (1) LED strip light mounted under the upper cabinets
6. One (1) Area designated for either a Motorola or EF Johnson 800 MHz Radio Control Head  
(Provided and installed by end user)

### **3.11.2 EXTERIOR STORAGE ACCOMMODATIONS**

#### **A. GENERAL CONSTRUCTION**

Outside, weatherproof, storage compartments shall be provided per KKK-A-1822F as amended. All exterior compartment walls and backs shall be constructed of .100 polished aluminum diamond plate. All compartment floors shall be formed of .090 aluminum sheet. Compartments for oxygen and backboards will have .250 compartment floors. All compartment ceilings shall be formed of .090 aluminum sheet. The ceilings and floors shall form around the sides and back to provide an overlapping joint. The floor and ceiling surfaces shall be double action (DA) sanded to 180 grit. The floors and ceilings are bonded to the walls and back and intermittent welded on six (6) inch centers

Each compartment shall be constructed as an independent unit with its own sides, top and back. All walls will be independent and no wall of any compartment may act as a wall for another compartment or part of the body. All compartment floors shall have weep-hole baffles to prevent road water entry. Each compartment floor shall be covered with black Dri-Deck open-grate tile material. Each floor shall be a "sweep out" design.

Compartment door jamb shall accommodate rigid fastening of compartment door hinges. The jamb shall include a hollow cell that shall conceal wiring for the non-mechanical door switch. The door jamb frame shall be cut 45 degree on each corner from the door edge corner, each of the four corners shall consist of a keyway and spline that is designed to drive into each corner and maintain a perfect 90 degree angle prior to welding. Additionally, the jamb shall be continuously MIG welded on the inside and the outside corners. *A seamless door jamb exterior is required to minimize corrosion - extruded type door jambs do not meet this specification. The skin shall completely conceal the door-jamb from view. "No Exterior Door Extrusions Allowed".*

#### **B. EXTERIOR COMPARTMENT DOOR DESIGN AND MATERIAL**

All compartment doors skins shall be constructed of a single piece of .090 thick, 5052-H32 aluminum sheet formed on all four sides. No welded seams are allowed, only one piece formed corners. The formed edges shall not have elongation cracks due to forming and shall maintain material thickness uniformly over the entire sheet. The formed edges uniformly round off seamless for better paint adhesion and aesthetic appeal that does not require cutting and welding in the corners.

The door skin shall be bonded to the frame assembly with an adhesive sealant in addition to intermittent welding.

The door frame extrusion shall be cut 45 degree on each corner. Each of the four corners shall incorporate a keyway and spline that is designed to drive into each corner and maintain a perfect 90 degree angle prior to welding. The door castings shall include gusset plates for additional support for the door construction. The door frame shall also incorporate a clearance way for UNF threaded blind fasteners for the door panels. The door panel shall not rest on the

body of the blind fasteners.

The door frame shall reinforce the perimeter of the skin pan. The extrusion shall incorporate a T-slot to receive an extruded, hollow, dual durometer closed cell UV protected TPV gaskets with relief holes for even compression for a proper and complete seal from the door to the door jamb. The gasket corners shall be welded without using adhesives for bonding. The door frame extrusion shall also add torsion resistance to the door assembly. Compartment doors shall have a reinforcement system of horizontal/vertical structure added to maintain skin flatness and impact resistant.

The door profile shall be a double pan form of 2.50" total thickness. Each door shall have the seal installed on the outer door pan flange to assure maximum sealing surface and to protect the rotary latching mechanism from environmental influences. The inner door pan flange shall be formed to provide a recess in which the inner door liner panel is seated. Inner door liner panels shall be affixed to the flange with stainless steel, #10-32 UNF machine screws threaded into aircraft quality blind fasteners. Each screw shall have a neoprene lock washer.

The interior door pan of each compartment door shall be stamped with a unique alphanumeric code denoting the specific size of that door. This code shall assure the quick and exact replacement of a damaged door.

### **C. EXTERIOR DOOR LOCKS, HANDLES AND LATCHING**

All compartment doors shall have an FMVSS 206 tested Tri-Mark free floating and locking exterior handles and SAE J839 approved Nader pins. The adjustable Nader pins with head flange mounted on the header and threshold doorjamb on all compartments with double doors and on the strike side of all compartments with single doors. When opened, the door shall activate the interior compartment lights.

Door hinges shall be full length stainless steel #304-2B buffed and polished with a .25" stainless pin and shall be fastened to the door and door frame with self-locking stainless steel screws. Hinges shall be staked, not welded, every 4" to prevent pin from moving. External handles and locking mechanism shall be a Tri-Mark 030-1875, free floating, polished chrome finish handle/lock assembly. Latches shall be near flush with the door skin. Each latch must be capable of being locked independently with an integral exterior key lock and also operate from the vehicles OEM remote key fob. The latch system is to be activated by the use of a ¼ inch, .25" zinc plated steel rod with a single point threaded adjustment mechanism with a locking nut. Systems operated by cables are unacceptable due to the tendency of cable to stretch or fatigue prematurely. The latch and the Nader pin shall be mounted so as not to interrupt the continuous door seal. All locks shall operate with a Tri-Mark 1030 key and keyed alike. A key template shall be provided by the County.

Any exterior compartment with two (2) doors shall have door latch handles only on the exterior of the door. Any exterior double door shall be installed so the forward door opens first. The rearward door shall be fitted on the inside door panel with a red placard in block font white letters indicating "**CLOSE THIS DOOR FIRST**". Hardware shall be chrome plated stainless steel or anodized aluminum. Any lock/unlock mechanism on the inside panel of the module entry doors shall be fitted with a black placard with etched block font white lettering indicating "**LOCK/UNLOCK**".

All compartment doors and entry doors will have a Kinequip red/white LED lighting mounted to the outer surface of all doors that are opened to rear traffic as well as the interior surface of all compartment/entry doors that open to rear traffic. These lights shall be 1" tall and 1.75" long with 4 LED lights per fixture (2 red, 2 white)

**D. DOOR CHECKS**

All vertically hinged doors in excess of 13" pass through width shall have a gas operated bi-directional spring shock door check. Door check brackets shall be drilled and tapped through a minimum of 3/8" material to preclude coming loose.

**E. DOOR THRESHOLD**

All swing open compartment doors (except forward upper most street side compartment) shall have a stainless steel threshold plate installed on the lower door jamb. Threshold plates shall be secured to the jamb with a minimum of high bond double back tape the full width of the door frame, 2" wide to the inside and downward on the door frame. All compartment doors shall be flush fitting.

**F. DOOR SEALS**

For optimum fit and closure, all compartment doors shall have a T-slot to receive an extruded, hollow, dual durometer closed cell UV protected TPV gaskets with relief holes for even compression for a proper and complete seal from the door to the door jamb. The gasket corners shall be welded without using adhesives for bonding.

**G. DRAIN HOLES**

Drain holes will be provided on the bottom of all exterior compartments. Each hole will be baffled to prevent splash water from entering the compartment

**H. CEILING VENTILATION**

Specified compartments will have a hat channel at the ceiling level. The hat channel will run to no closer than 1" from the compartment side walls to allow for air exchange. Hidden from view, will be two to three, (4") holes above the hat channel to exhaust the compartment air when the door is closed to allow it to close with minimal effort.

**I. COMPARTMENT FLOOR CONFIGURATION**

All compartment floors will be a sweep out type floor. The compartment floor will be flush with the lower door jamb to facilitate compartment floor cleaning. The edge of the compartment floor will be continuously welded to the lower door jamb. Heat generated from welding will not distort the straightness or flatness of the jamb or compartment floor. The weld quality must be aesthetically uniform.

**J. LIGHTING**

Each exterior compartment shall be illuminated with a round, LED light. These lights shall have clear acrylic lenses and be recessed into the compartment sides and/or ceiling in a location to maximize compartment illumination. Compartments with full length adjustable or fixed shelving shall have an additional light located just below each shelf to provide maximum light.

Each exterior compartment door shall have an individual automatic switch to signal a "door or compartment open" condition and to turn on interior lighting when the door is opened. The switches shall be GE heavy duty, magnetic switches recessed mounted in the doorframe header interior to the protective door seal. Magnetic switches shall be the only switches installed in this application. The upper portion of the magnetic switch shall be glued in place to keep it secure.

**K. ADJUSTABLE SHELVES and SHELF BRACKETS**

A standard duty aluminum adjustable shelf shall be provided on all exterior compartments with the

exception for Inside/Outside compartment (ALS) and Spine Board compartment. The shelf shall be formed of .125 (1/8") thick aluminum, with 2 inch upward turned lips on all four sides. The shelf shall be mounted on Unistrut infinitely adjustable, aluminum extruded, and heavy duty shelf track. Incrementally adjustable, non-aluminum shelf track is not acceptable.

Each exterior adjustable shelf shall include four (4) self-gusseted .157" thick shelf brackets that will allow for easy adjustment up and down for each shelf. Each bracket shall be secured to the shelf by carriage head bolts on the top of the shelf and hex head bolts to secure them to the shelf tracking material in the compartments. This will guard against shelf deformation in the compartments when the shelves are secured in place. Removable black "Dri-deck" material shall cover all shelves unless otherwise specified.

**L. CURBSIDE FORWARD INSIDE/OUTSIDE (ALS) COMPARTMENT**

There shall be an Inside/Outside access compartment located on the curbside, forward of the curbside entry door. It should be at minimum 68" high x 26" wide x 34" deep at the outboard side. The compartment shall be fitted with one adjustable shelf of .75" wood and finished the same as the fixed shelf. It shall have heavy duty adjustable shelf track on four sides. The adjustable shelf is located in the top half of the compartment. There shall be one .75" wooden shelf fixed 8" below center in between the two interior openings with interior doors that close even with the fixed shelf. The base and shelves shall be covered on top with glued material matching the floor of the ambulance. The lowest cabinet area that is accessible from the inside of the module shall have an offset in the bulkhead. This offset will follow the bulkhead outline of the cab insert into the box. This offset shall be 6" from the forward most bulkhead just behind the passenger's seat towards the inside cabinet doors of this ALS cabinet. The offset shall then be 10" inset from the ALS exterior compartment door. This "L" shape or dog-let offset will only be in this portion of the ALS cabinet. Matching laminate on the bottom, and L-channel stainless steel trim on the outer edges to prevent the material from peeling up. No shelf lip or Dri-deck shall be required for this shelf. There shall be three (3) lights provided, two (2) above (one centered above the adjustable shelf and one centered below the adjustable shelf) and one (1) just below the fixed shelf on the forward wall.

**M. BATTERY/INTERMEDIATE COMPARTMENT**

A slide out drawer/compartment 22" wide x 14" high x 20" deep shall be provided for the storage of the two (2) batteries. This compartment shall be directly aft of the curb side rear wheels, between the wheel well and the curbside rear compartment.

**N. CURBSIDE REAR COMPARTMENT**

Vertical compartment that is a minimum of 20" wide x 80" high x 21" deep and with an opening of 20" wide x 78" high shall be provided. This compartment is designed for the storage of long backboards and splints. It shall have a 2" retainer strap installed with slack 16" below the ceiling without a quick release. This strap is to help prevent long backboards from falling out when the door is opened.

Two (2) vertical, 17.5" wide X full height of compartment dividers made of .125" smooth aluminum backboard dividers shall be through the inboard wall of compartment. They shall be centered vertically and horizontally, creating two (2) distinct and equal sections for storage of long backboards or other equipment and one (1) fixed horizontal shelf. A flush mount light shall be centered in the ceiling of each section. To provide equipment protection retained in the compartment, the dividers shall be Line-X Brand coated to include a non-slip sprayed-on aluminum surface. The surface of this divider must contain no V.O.C. Or C.F.C's and shall be solvent free.

In the forward third section of this divided compartment there shall be a fixed shelf installed 40" from the bottom floor finished per the specifications.

**O. STREETSIDE UPPER FORWARD COMPARTMENT**

This compartment will be located in the left front corner of the modular body. The minimum compartment dimensions will be 17.56" high x 22.125" wide x 19.0" deep. The exterior handle will be at the top of the compartment and the venting will be at the lower portion of the door. This compartment shall house the Air Horn Compressor, Onboard Suction Pump, IOTA 45 amp, Vanner Lifestar, Air Horn Solenoid, 2, 120 volt breakers, and a 3" Conduit from leading from the front right of this cabinet to the Action Area Wall. A surface mount LED light shall be mounted in the ceiling in this compartment.

**P. STREETSIDE FORWARD COMPARTMENT**

This compartment will be located in the left front corner of the modular body. The minimum compartment dimensions will be 61.5" high x 22.125" wide x 20.0" deep. There will be 5" access port in the rearward wall of the compartment for access into the cable raceway. The center of the hole is located 41.5" up from the compartment floor. The rear half of compartment shall be used for storage of the oxygen supply. An oxygen mounting shall be installed in this cabinet to accommodate an M/H oxygen bottle. This mounting shall have three locking straps around the bottle and a safety strap or bracket for the neck of the bottle.

A surface mount LED light shall be mounted in the ceiling in this compartment.

**Q. STREETSIDE INTERMEDIATE COMPARTMENT**

This compartment is located adjacent and rearward to the left front compartment, between the front compartment and the rear wheel well. The minimum compartment dimensions will be 38" High x 44.5" Wide x 18" Deep. There will be 5" access port in the forward wall of the compartment for access into the cable raceway. The center of the hole will be located 34" up from the compartment floor. A three (3) inch conduit shall be installed leading from the lower left rear corner wall of this compartment to the vehicle cab, behind the left side of the drivers seat. A Two (2) inch conduit shall be installed upper left corner wall of this compartment to the overhead HVAC cabinet or plenum.

This compartment shall be used as the radio compartment. The four designated electrical "J" posts (3.7.7.3.A) shall be mounted high and forward on the inner wall.

A standard duty aluminum adjustable shelf will be provided. The shelf will be formed of .125 (1/8") thick aluminum, with 2 inch upward turned lips on all four sides. The shelf will be mounted on Unistrut infinitely adjustable, aluminum extruded, heavy duty shelf track. Incrementally adjustable, non-aluminum shelf track is not acceptable. The shelf will be 17" deep.

The adjustable shelf will include four (4) shelf gusseted .157" thick shelf brackets that will allow for easy adjustment up and down for each shelf. Each bracket will be secured to the shelf by carriage head bolts on the top of the shelf and hex head bolts to secure them to the shelf tracking material in the compartments. This will guard against shelf deformation in the compartments when the shelves are secured in place.

A set of double hinged compartment doors will be set for this special request compartment. Each door will have a single handle and two rotary latches.

(2) Two lights will be mounted in the compartment. (1) One light will be mounted centered in the ceiling of this compartment and (1) one light shall be mounted on the bottom of the adjustable shelf, centered. The lights will be surface mount and will be LED.



The upper right portion of this cabinet will have a boxed out area for a sharps container that will be accessed from the interior of the module.

#### **R. STREETSIDE REAR COMPARTMENT**

This compartment will be located in the left rear corner of the body. The minimum compartment dimensions will be 36" High x 37.125" Wide x 18" Deep. There will be a dogleg for interior waste disposal with a door. The door for the dogleg will have a rubber bumper and open towards the rear in the compartment.

This compartment shall house a secure plastic waste/trash receptacle that is at minimum 4" wide x 10" high x 6" deep. The housing for the sharps container shall be .125-diamond plate and separate from the rest of the streetside rear compartment. The housing shall allow for easy access to the receptacle for disposal of trash. The biohazard compartment shall be located within the streetside rear compartment at the rearward inboard upper edge for access from the streetside interior wall below the cabinets at the rear of the module.

A set of double hinged compartment doors will be set for this special request compartment. Each door will have a single handle and two rotary latches.

A standard duty aluminum adjustable shelf will be provided. The shelf will be formed of .125 (1/8") thick aluminum, with 2 inch upward turned lips on all four sides. The shelf will be mounted on Unistrut tracking, infinitely adjustable, aluminum extruded, and heavy duty shelf track. Incrementally adjustable, non-aluminum shelf track is not acceptable. The shelf will be mounted to the forward wall of the compartment and the dog leg for interior waste disposal.

The adjustable shelf will include four (4) self-gusseted .157" thick shelf brackets that will allow for easy adjustment up and down for each shelf. Each bracket will be secured to the shelf by carriage head bolts on the top of the shelf and hex head bolts to secure them to the shelf tracking material in the compartments. This will guard against shelf deformation in the compartments when the shelves are secured in place.

(2) Two lights will be mounted in the compartment. (1) One light will be mounted centered in the ceiling of this compartment and (1) one light shall be mounted on the bottom of the adjustable shelf, centered. The lights will be surface mount and will be LED.

#### **S. POWER DOOR LOCK SYSTEM – EXTERIOR COMPARTMENT DOORS**

All exterior compartment doors, excluding the battery drawer, shall be equipped with Tri-Mark free floating 030-1875 power door lock actuators that shall be activated from the OEM cab door lock/unlock buttons and the remote key FOBs. FOBs/chassis shall be programmed so that the vehicle can be locked with the key in the ignition with the engine running or in the off position.

#### **3.11.6 COT LITTER FASTENER**

All mounting shall be supplied and manufactured by the cot mount manufacturer. A crash stable center mounted Stryker Power Load System, P/N 6390, shall be installed by the Proposer. All mountings shall be through bolted through 1/2 (.500) inch thick, 6061-T-6 Aluminum plate structure. One and one half (1-1/2) inch x six (6) inch thick plates shall either be MIG welded or Huck structurally fastened to the

floor grid for both cot mount and attendant seat fastening locations. All fastening hardware shall be either through bolted or tapped depending on under floor clearances due to chassis installed components. Mounting bolts shall not point toward fuel filler or fuel vent hoses, in accordance with good engineering practices set forth by the Society of Automotive Engineers and Ford's Qualified Vehicle Modifiers' program.

This Power Load System shall meet the following.

- 1 Stryker PowerLoad 6390000000
- 1 Standard Comp 6390 PowerLoad 6390026000
- 1 English Manual 6390600000
- 1- 3 year PowerLoad Protect Warranty (parts, labor & travel) 77503001
- 1 Prevent Power-LOAD- 6year 77505002
- 1 6506 PWRLD COMPAT UPGRADE KIT 6506700001

This vehicle must meet or exceed AMD Standard 004 and current KKK-A-1822-F Litter Retention System.

### **3.11.7 IV HANGERS**

IV HOOK No 1: One chrome plated, surface mounted IV hook, with a spring loaded retention gate, and shall be supplied in the ceiling of the patient cabin. The hook shall feature an anti-swing strap next to the hook.

Located of the Primary patient, in the close proximity to the Head/Chest area of the patient.

IV HOOK No 2: One chrome plated, surface mounted IV hook, with a spring loaded retention gate, and shall be supplied in the ceiling of the patient cabin. The hook shall feature an anti-swing strap next to the hook.

Located of the Secondary patient, in the close proximity to the Head/Chest area of the patient.

I. V. BAG HANGING HARDWARE, No 3: One self-contained recessed I. V. Hook assembly shall be installed in the ceiling. The I. V. Hook assembly shall fold and stow recessed in a cast aluminum housing. The hooks are to be spiral shaped to preclude I. V. Bag from falling off with push button release for each fluid bag. The I. V. Hook assembly shall hold (2) two bags of fluid. A rubber with Velcro anti-sway device shall be included for I. V. retention, without depending on adjacent cabinetry.

Located of the Primary patient, in the close proximity to the Knee/Waist area of the patient's left side.

I. V. BAG HANGING HARDWARE, No 4: One self-contained recessed I. V. Hook assembly shall be installed in the ceiling. The I. V. Hook assembly shall fold and stow recessed in a cast aluminum housing. The hooks are to be spiral shaped to preclude I. V. Bag from falling off with push button release for each fluid bag. The I. V. Hook assembly shall hold (2) two bags of fluid. A rubber with Velcro anti-sway device shall be included for I. V. retention, without depending on adjacent cabinetry.

Located of the Secondary patient, in the close proximity to the Waist/Chest area of the patients left side.

## **3.12 OXYGEN AND SUCTION SYSTEMS AND EQUIPMENT**

### **3.12.1 OXYGEN MAIN SUPPLY AND INSTALLATION**

#### **A. GENERAL REQUIREMENTS**

Per KKK-A-1822F except that ambulance manufacturer shall provide storage for an M size cylinder. The medical oxygen system shall be capable of storing and supplying a minimum of 3000 liters of oxygen. A suitable high-pressure hose shall be provided. The concealed oxygen supply hose shall be .250" ID, .50" OD nylon base with polyester fiber reinforcing. This electrically conductive hose shall be certified to 1,875 psi and have a 7,500 pound burst rating. The fittings shall be DISS and flare, and be securely crimped to the barbed fittings by means of compressed copper sleeves. Oxygen supply hose shall be routed through the ceiling of the ambulance body and be secured with non-abrasive plastic "C" clamps.

#### **B. OUTLETS AND REGULATORS**

An oxygen outlet bank shall contain (2) oxygen outlets and (1) vacuum outlet on the aft end of the action area wall. Two (2) additional oxygen outlets shall be located on the curbside wall action area, between the attendant's seat and the curb side entry door. The exact positioning shall be determined at a pre-construction meeting. A fifth oxygen outlet shall be ceiling mounted approximately 66" from the rear doors and centered over the cot mounting system/patient area. This outlet shall be recessed into the ceiling, similar to that of the overhead grab rails. The exact positioning will be determined at pre-construction meeting. The primary pressure regulator shall be an Amvex P/N 0797-0237 and preset at 50 PSI. The oxygen outlets shall be Ohio Medical.

#### **C. PRIMARY REGULATOR MOUNTING**

The main oxygen regulator shall be secured to a Hubbell Tool Balancer to prevent the regulator from being dropped and damaged. The low pressure oxygen supply line to the module shall be located as far back in the compartment as possible to prevent damage to the line while replacing oxygen cylinders. The low pressure line shall be routed out of the compartment through proper secure mounts and with minimum excess line left in the compartment. The lines shall be properly installed to the regulator assembly with Teflon tape and the system needs to pressure tested.

#### **D. ACCESS OPENING**

There shall be an opening 6" wide x 12" high provided from the inside Action Area to the oxygen storage compartment. Opening shall allow easy access to main oxygen turn valve when secured in the oxygen bracket. Edges of door opening shall be trimmed in aluminum "J" mold. A 3/8 inch (0.375") Polycarbonate door with self-closing hinges and latching handle shall be installed.

#### **E. OXYGEN SUPPLY LINES**

Oxygen supply line shall go from tank regulator to the five (5) oxygen outlets. The entire oxygen system shall be subjected to a 200-psi leak test for 24-hours before installation of panels or covers that may obscure or hide the system components. After the vehicle is completed, a test as prescribed by AMD Standard 015 shall be conducted for a period of two (2) hours to insure system integrity. Each outlet shall be checked for 100LPM flow at 50 psi. This test shall be performed using nitrogen gas to purge the lines of all moisture and foreign debris. Upon completion of the test, the lines shall be bled free of nitrogen and capped. This medical oxygen system shall meet or exceed AMD Standard 015, Ambulance Main Oxygen System Test.

**F. OXYGEN WRENCH**

An alloy steel open ended 1 1/8" (1.125") wrench with 12 points and nickel-chrome plating shall be provided. It shall be connected with plastic coated steel braided cable, at least 24" in length through a hole on the distal end. The total length of the wrench shall be 8.5". It shall be stowed in the oxygen storage compartment on the right hand wall of the compartment near the regulator on a mounting bracket to keep the wrench stowed securely.

**G. OXYGEN TANK MOUNT**

One user supplied M-size compressed, medical gas cylinder shall be carried and secured, vertically inside the left front exterior compartment. Cylinder rack shall be through bolted to the back wall. A rust free cylinder rack with (3) heavy duty pull style, web straps with quick spring loaded release shall be type tested to AMD Test 003 Oxygen Tank Retention system Test. The cylinder valve shall also be visible and accessible from the inside through a clear polycarbonate door.

There shall be an additional webbed strap looped onto the racks upper most securing strap. The strap is to have two loops. The bottom loop will be the section secured to the upper most strap and the upper loop shall be secured onto the neck of the oxygen or medical air bottle to help secure it in place in the case of an upward exertion.

This rack shall be for a MEDICAL OXYGEN cylinder. The oxygen system input hose shall be suspended over this rack. This input hose shall feature a nonferrous 9/16-18 RH bottle nut and regulator barb. This connection shall comply with the diameter index safety system (DISS) set forth by the Compressed Gas Association (CGA) for safety

**3.12.2 SUCTION ASPIRATOR, PRIMARY PATIENT**

A SSCOR 20000/02 aspirator system with, heavy duty plastic bracket and wall-mounted vacuum control shall be located in the streetside action area control panel, near the LX1 display. The suction bracket shall be able to securely hold a Bemis brand disposable canister, 1200cc capacity, and 6" diameter x 6.50" tall. A Gast brand electric suction pump shall be supplied and installed in the forward upper exterior compartment on the streetside of the module. Suction unit will be mounted on rubber vibration isolators to minimize any vibration noise emitted into the patient cabin. The vacuum outlet shall be mounted in the action area aft of the two oxygen outlets as close to the work surface. To prevent premature fatigue of the suction plumbing the line from the vacuum pump to the wall outlet shall be .375" I.D. double braided neoprene hose. The ambulance suction system shall provide a free air flow of at least 20 liters per minute and achieve a minimum of (11.81 in) Hg vacuum within four seconds after the suction tube is closed. There shall be a vacuum control and shut-off valve to adjust the vacuum levels or to discontinue aspiration immediately. It shall include one (1) 10-foot length of transparent non-kinking tubing and an operator's manual.

**3.13 ENVIRONMENTAL - CLIMATE**

**3.13.1 ENVIRONMENTAL SYSTEMS**

A heating, ventilation, and air conditioning system in the patient compartment shall be provided. No roof mounts or units, which mount to the outside of the modular body, are acceptable. Unit shall be a combination hot water heater and air conditioner that is separate from the front OEM HVAC system including switching in the Class 1, LX1 displays. This unit shall be a ACC 22091A000C with plenum and installed in a bulkhead cabinet above the walk-thru. The A/C unit shall use a three speed brushless permanent magnet motor with a three (3) year warranty. Two (2) LX1 controlled liquid shut off valves shall be used to control the heat/cool to the HVAC system. The return air shall have a powder coated steel grille

containing a HEPA filter and a charcoal filter. The system shall be Tee'd into the OEM HEAT/COOLING system. An ACC condenser assist fan shall be installed to help increase heat removal from the OEM AC system.

**3.13.2 HEATING CRITERIA**

The combination heater/air conditioner shall have an air output of 580 CFM at 0 static pressure with a heating capacity of 43,000 BTU.

**3.13.3 AIR CONDITIONING CRITERIA**

The combination heater/air conditioner shall have an air output of 580 CFM at 0 static pressure with a cooling capacity of 32,000 BTU.

**3.13.4 VENTILATION CRITERIA**

Vents for the HVAC system shall be mounted in the ceiling in two rows with five outlet vents along each side to allow the most widespread distribution of air. Air system vents shall have adjustable louvers to direct air flow. Ventilation systems shall provide a complete change of the room air within both compartments at least every two minutes with the vehicle stationary on high idle.

**3.13.4.1 EXHAUST VENTILATION SYSTEM**

Exhaust ventilation system shall have two (2) Detmar #751 three (3) speed power exhaust vents having a 240 CFM air flow rating per vent and shall be installed one in the RH FRONT corner of the module pulling fresh air in and one installed in the LH REAR CORNER blowing exhaust air out. Both POWER VENTS having adjustable air registers that can be fully closed or partially open. The exhaust system shall operate from the rear LX1 multiplexing system.

**3.13.5 ENVIRONMENTAL CONTROLS**

Adjustable, manual and/or thermostatically operative controls will permit heating and/or air conditioning and ventilation in the patient compartment separate and independent from the chassis. Controls shall be incorporated into the LX1 multiplexing electrical system's front and rear control display. Unit fan shall have a multi-speed blower plus an off function and be thermostatically controlled.

**3.14 COMMUNICATIONS**

**3.14.2 RADIO (MOBILE) PROVISIONS**

**A. RADIO STORAGE**

The center exterior storage compartment on the street side of the vehicle, just forward of the rear wheels, will be the radio compartment. Radios will be installed by the end user.

**B. RADIO POWER**

There shall be four (4) J-Posts in the radio compartment (street side middle compartment) to provide power to the 8—MHz radios.

1. 50 amp, 12 VDC Battery constant power, 6 awg wire
2. Ground 6 awg wire
3. 30 amp, 12 VDC Ignition power, 10 awg wire
4. 30 amp 12 VDC Timed Battery Switch/IOTA Converter power, 10 awg wire.

### **3.14.3 ANTENNA, CABLE, MOUNTING**

#### **A. CONDUITS AND CABLES**

There shall be two conduits to the RADIO COMPARTMENT (street side middle compartment). One 4" conduit shall go between the lower of the forward end of the inboard wall of the Radio Compartment to behind the driver's seat against the LH B pillar to pull radio harnesses through. A 2.5" conduit shall go between the upper inboard corner of the forward wall of the street side middle compartment to the overhead HVAC compartment above the walk through to pull antenna coax through. These are empty conduit expressly designed to add wires after vehicle delivery by the end user or his/her authorized agent shall be supplied and installed. The conduit shall be semi-rigid, nonconductive liner that is free of inside ridges that can bind on the wire harness being pulled through the conduit. The outer jacket shall be a non-conductive, spiraled rigid coil designed to maintain the original shape of the liner, throughout the length of the conduit run. There shall be provided a pull wire through the conduit to aid the purchasing agency in future installation of equipment. There shall also be a 4" air sealed plated over installation hole at the outboard upper side of the forward wall of the street side middle compartment. Another 4" air sealed plated over hole in the O2 compartment on the aft wall outboard just above the height of the action shelf located on the other side of the wall.

#### **B. ANTENNA CABLE**

The antenna bases and all cables associated with the radio system shall be installed by the end user.

#### **C. CIRCUIT PROTECTION**

All electronic devices and equipment installed which produce RFI shall have the proper filters, suppressers or shielding to prevent electromagnetic radiation and the resultant interference to radios and other medical electronics.

### **3.14.4 SIREN- PUBLIC ADDRESS SYSTEM**

#### **A. PRIMARY SIREN**

Primary siren shall be a Whelen model 295SLSA1, 1ATS, E-Series and equipped with public address feature and a noise canceling palm microphone. The sirens control functions and sound characteristics shall consist of P.A., manual, wail, yelp, electronic horn and pierce. It shall be mounted side by side with the Secondary Siren in the console. It shall be wired to the times battery switch with an ignition signal to power on the siren head.

#### **B. SECONDARY SIREN**

Secondary siren shall be a Whelen model 295SLSA1, 1ATS, E-Series without microphone. The siren control functions and sound characteristics of P.A., manual, wail, yelp, electronic horn, and pierce.

#### **C. SIREN SPEAKERS**

The primary siren's speakers shall be two (2) Federal #ES100-ESMFT-EF, E-Series ILOS. They shall be recessed mounted in a pre-described hole in the outer ends of the front bumper. The secondary siren's speakers shall be two (2), Whelen, 3SA315EKT speakers and mounted in the grill inboard of the headlights.

#### **D. LOW FREQUENCY SIREN**

A low frequency siren system shall be a Whelen Howler mounted under the front bumper per the manufacturer's recommendation and bracket. It shall use the primary siren speakers and have set for a .25 primary siren tone frequency for 7.5 seconds. The activation switch shall be mounted on the left hand side (drivers), forward and upper side of the console.

**E. SIREN CIRCUIT BREAKERS**

Each siren shall be wired to separate 20 amp circuits and properly labeled on the breakers switch.

**3.15 ADDITIONAL EQUIPMENT, SYSTEMS, AND ACCESSORIES**

**A. ASSIST GRAB RAIL**

The curb side entry handle shall be a curved stainless steel Grab rail located at the forward end of the curbs side attendants area wall. It shall be mounted to a tapping plate in the modular body to give it the required strength. The grab handle shall have a curve to allow the grab part to impede in to the curbside door opening to allow easy access. The grab rail shall be at least 15 inches in length. The handle shall have antimicrobial coating and be yellow in color.

The curb side entry door grab handles The curbside side entry door shall be equipped with a three point, "L" Shaped 1 ¼ diameter, stainless steel with Yellow anti-microbial coating, handicap style grab handles to aid in door closure and entry assistance.

The grab handle shall run horizontally, directly above the inside door latch and bend Ninety degrees downward to create a banister (handrail) to aid in vehicle egress. The door handle shall be fastened directly to the horizontal door structure that is welded to the door assembly.

The rear entry door grab handles shall be equipped with a three point, "L" Shaped 1 ¼ diameter, stainless steel with gray anti-microbial coating, handicap style grab handles to aid in door closure and entry assistance.

The grab handle shall run horizontally, directly above the inside door latch and bend Ninety degrees downward to create a banister (handrail) to aid in vehicle egress. The door handle shall be fastened directly to the horizontal door structure that is welded to the door assembly.

**B. AIR HORNS**

A Buell air horn system shall be provided with two (2) chrome plated trumpets, one (1) 10", P/N 1061 and one (1) 12", P/N 1062. A medium duty 12 VDC oil-less direct drive compressor (motor driven), P/N 5440 mounted at the forward, upper ceiling of the streetside upper forward compartment. Buell provides this complete with auto pressure switch. The air tank, P/N 2242 shall be included and mounted to the chassis frame so that the drain hole is facing downward. Horns shall be activated by a horn/air horn relay using the OEM horn ring and switched on only when the master emergency switch is on in the LX1 multiplex system. No foot activated or push button type switches are acceptable. Trumpets shall be mounted under the front frame rails and behind the front bumper with the 12" trumpet mounted on the driver side and 10" trumpet on the passenger side.

**C. OVERHEAD GRAB RAILS**

RECESSED CURB SIDE OVER HEAD ASSIST RAIL: This rail will be naturally accessible to assist working attendants in maintaining their balance. The rail will exceed federal specification KKK-A-1822 3.15.2C. The rail will be 1 ¼ diameter, 100% stainless steel and 72 inches long. All rail fittings will be TIG welded to the main rail. The rail will be located over the attendant's area, located curb side of center pad. Grab rails that utilize separate, setscrew rail fittings are not reliable and not acceptable.

The patient area camera will be located in the rear most portion of the curb side assist rail recessed area and will be directed towards the cab of the ambulance. The camera will be connected to the LX-1 display in the cab of the ambulance.

RECESSED STREET SIDE OVER HEAD ASSIST RAIL: The rail will exceed the current revision of current Federal specification KKK-A-1822. The rail will be 1 ¼ diameter, 100% stainless steel and 72 inches long. All rail fittings will be TIG welded to the main rail. The rail will be recessed in an ABS pan 1.5", located streetside of center pad. Grab rails that utilize separate, setscrew rail fittings are not reliable and not acceptable.

Both grab rails shall be finished in powder coated safety yellow and will be recessed into the ceiling. The grab rails shall be fastened with bolts, washers and nuts of the appropriate dimension, through the interior ceiling panel and through the .090" aluminum accessory plate welded into the roof structure. Assist rails fastened with self-tapping machine screws are not acceptable. These grab rails must meet or exceed AMD Standard 008, Load Test for Ambulance Patient Compartment Grab Rail.

**D. AUXILLIARY IV POLE**

A 24" long by 1" diameter stainless steel IV pole shall be provided and installed on the back wall of the attendants area, or the forward interior bulkhead of the exterior spine board compartment. This IV Pole is to be used to support auxiliary IV pumps and other equipment during transports. It shall be mounted with top and bottom brackets and be located above the attendants area base cabinet. Exact location will be determined at a pre-construction meeting.

**E. NO-SMOKING/SEAT BELT SIGNS**

Two (2) "No Smoking" and "Fasten Seat Belt" placards shall be provided and be a plastic placard and mounted on the passenger side of the dash and on the action area wall. The International "No Smoking" and "Fasten Seat Belt" placard shall be provided.

**F. BACKUP ALARM**

A Whelen P/N WBUA97 backup alarm shall be installed on a 2" x 2" floor tube at the rear of the ambulance. This alarm shall activate whenever the ambulance is put into reverse gear. No reverse alarm disable feature shall be installed. When activated, this alarm shall generate an intermittent warning tone at a minimum of 97 dBs

**G. BACKUP CAMERA**

One (1) Voyager brand backup camera shall be installed on the rear of the unit above the rear doors and include an aluminum shield painted the same color as the module mounted above it to block out excess light. The backup camera system shall use the LX1 front display for the cab monitor. The camera shall activate when the ambulance is placed in reverse gear.

**H. INTERNAL STOP AND TURN**

There shall be a single LED light located interior the patient area mounted over the rear doors secured to the rear header pad to indicate to the patient area personnel of the intention of the driver to turn and/or stop the vehicle. The turns shall be amber and the stop shall be red in the same fixture. The light is to be a KFL-SLRA8 fixture.

**I. MODULE CLOCK**

A battery operated digital atomic wall clock with hours, seconds, indoor and outdoor temperature and sender unit shall be installed in the rear cushioned pad, centered above the rear entry doors. The clock shall be recessed into the center of the cushioned pad and secured with Velcro. The Atomic digital clock shall be a La Crosse Technology P/N WS-8119U-IT-B with outdoor temperature sender P/N TX-38U-IT. The sender unit shall be shipped loose.

**J. IV FLUID WARMER**

A warming device shall be installed per the manufacturer's recommendation on the floor of the IV



warming cabinet that will maintain a fluid temperature of 109 degrees F (43 degrees C). IV fluid warmer shall be a Smithworks IV warmer, 12V 100 watt, 12" x 15". The IV warmer unit contains an ON/OFF switch. The mounted unit shall allow easy access to the switch. The IV warmer shall not be on the LX1 system but hardwired to the Vanner #20-1050 CUL DC Lifestar.

**K. FIRE EXTINGUISHERS**

Two (2) 5-pound ABC fire extinguishers shall be provided and mounted, one behind the passenger seat in the cab and one shipped loose. Extinguishers shall come with heavy duty quick release brackets.

**L. SPOTLIGHT**

A hand-held Optronics BlueEye KB-4003 spotlight with a minimum of 400,000 candle power lamp, corrosion proof housing, momentary switch and a minimum of eight (8) foot heavy duty coiled cord shall be provided. This spotlight shall be hardwired in the console to the vehicle 12 VDC circuit that is on with the ignition switch. The spot light tray shall be mounted under the passenger's seat, protruding forward of the passenger's seat 1-1/2 inches and inside the SRS wiring with fasteners of the tray accessible in the floor, just in front of the seat base.

The spot light tray shall be constructed from .090 smooth aluminum with plastic trim on the edges. The plastic trim shall protect the spotlight housing from damage. The bracket provides not only a stable mounting device for the spotlight but also a heat sink form to assist in the dissipation of heat following use of the light. It is designed to keep the light in place, easily accessible, and protect the momentary switch from an accidental activation. The tray shall have a rubber insert to keep the spot light from sliding out.

**M. INTERIOR GRAB HANDLE**

An Austin hardware #AE901229 grab handle shall be mounted to the inside wall of the curbside entry door approximately 16" above the top of the squad bench and protrudes 2.5" into the door way opening. It shall be black in color.

**N. UNDER COATING/RUST PROOFING**

Undercoating shall be liberally applied to the entire undercarriage of the chassis and vehicle body. Undercoating shall be applied to a thickness between .062" to .125" as prescribed in KKK-A-1822F and according to Ford QVM guidelines.

**O. COT/STRETCHER**

The following will be provided by the ambulance manufacturer or winning bidder and will be shipped with each ambulance purchase.

- 1 Power-PRO XT 6506000000
- 1 PR Cot Retaining Post 6085033000
- 1 Power Pro Standard Components 6506026000
- 1 XPS Option 6506040000
- 1 No Runner/HE O2 0054200994
- 1 Equipment Hook 6500147000
- 1 Non Power-Load Compatible 6506029000
- 1 No HE Section O2 Bottle 6506036000
- 1 Base Storage Net 6500160000
- 1 Head End Storage Flat 6500128000
- 1 Foot End O2 Bottle Holder (Jumbo-D O2 Bottle) 6500241000
- 1 English Manual 6506600000
- 1 SMART Charger Mounting Bracket 6500034000

- 1 120V AC SMRT Charging Kit 6500028000
- 1 Short Hook 6060036017
- 1 XPS Knee Gatch Bolster Mattress 6500003130
- 1 Steer Lock Option 6506038000
- 1 3 YR X-Frame Powertrain Warranty 7777881669
- 1 2 YR Bumper to Bumper Warranty 7777881670
- 1 DOM SHIP (NOT HI, AK, PR, GM) 0054030000
- 1 G-RATED RESTRAINT PACKAGE 6500002030
- 1 Dual Wheel Lock 6086602010
- 1 3 Stage IV Pole PR Option 6500315000
- 1 STANDARD FOWLER 6506012003
- 1 Protect Power Cot – 3-Year Silver Maintenance Warranty 77101001

**P. STAIR CHAIR**

The following will be provided by the ambulance manufacturer or winning bidder and will be shipped with each ambulance purchase.

- 1 Stair-PRO Model 6252 6252000000
- 1 Common Components 6252026000
- 1 Domestic Manual 6250001160
- 1 2 Piece ABS Panel Seat 6250021000
- 1 Polypropylene Restraint Set (Plastic Buckles) 6250160000
- 1 2 year parts, labor & travel Warranty 7777881660
- 1 Main Frame Assembly Option 6252022000
- 1 Standard Length Lower Lift Handles 6250024000
- 1 In-Service Video (DVD) 6250001162
- 1 Footrest Option 6252027000
- 1 No IV Clip Option 6252024000

**Q. POWER DOOR LOCK/UNLOCK SWITCHES**

Power door lock/unlock switches shall be incorporated into the inner door panels or handle escutcheon plate. Using Tri-Mark 030-1875 free floating handle and associated parts.

**S. REMOTE ENTRY KEYPAD**

A programmable remote access keypad with a ten (10) digit code pad will be incorporated into the Ambulance module. This access keypad will be located just aft of the curb side entry door, between the door and rear wheel well on the exterior of the box. The access keypad will be able to lock and unlock all exterior compartments, curb side entry door, rear entry doors and both cab doors from this location.

**T. ASSIST HAND/GRAB STRAP**

A vehicle strap made from 2 inch wide seat belt material sewn with heavy duty stitching, looped around itself shall be installed centered, above the rear entry doors. This strap shall be approximately 10 inches in length and shall be used as a safety/assist grab strap. The strap shall be yellow in color and secured to the door frame, just behind the padded cushion above the rear entry doors.

## **3.16 PAINTING, COLOR AND MARKINGS**

### **3.16.1 PREPARATION FOR PAINTING**

#### **A. GENERAL PAINT PREP**

To produce a high quality paint finish and to comply with the paint manufacturer's certification requirements for support of the warranty the preparation and painting process described below, shall be used.

**MECHANICAL ADHESION PROMOTER:** The entire module shall be degreased. Degreaser shall be applied to manufacturer's recommendations. The module body is to be inspected for flaws and imperfections, and to assure built to order specifications. All surfaces shall be initially sanded with 180 grit paper and all imperfections repaired.

**CHEMICAL ADHESION PROMOTER:** The module shall be hot-water washed at (140 degrees or greater). Then the aluminum Body shall be treated with Alumiprep 33 acid etching followed by a complete De-ionized body rinse. To ensure all surfaces are cleaned, this step shall be repeated a second time. The entire unit shall be wet coated with Alodine 5700 conversion coating and de ionized water mixed. The module body is baked at 160 degrees to dry.

#### **B. FIXTURE REMOVAL AND PROTECTION**

Prior to initiating the surface preparation process, all hardware, latches, light fixtures, door hinges, corner trim, etc. shall be removed from the body. Additionally, any portion of the chassis, which does not require refinishing, shall be protected from the ensuing processes.

#### **C. EXTERIOR FASTENERS**

All screw sites require a replaceable nylon insert for the fastener to thread into. This will isolate the dissimilar metals. Each hole shall be treated with an Electrolysis Corrosion Control compound prior to installation of the nylon inserts. All exterior screws shall be stainless steel.

#### **D. EXCESS MATERIAL REMOVAL**

To rid the aluminum body of any extraneous materials or material impurities the entire surface shall be washed and wiped dry with a PPG certified wax and grease remover. Excess weld material shall be removed by grinding all welds, seams, and any other body imperfections. The entire surface shall then be sanded with 80 - 150 grit dry sandpaper to provide good adhesion for any fillers and primers, sanding with 150 grit or finer as a final sand. The required areas shall be filled with approved PPG premium lightweight filler and sanded smooth. A premium two component glazing putty shall be applied directly over these areas to ensure adequate base for application of primers. Before final cleaning of the metal surfaces before painting, any new holes shall be drilled prior to final cleaning and painting.

### **3.16.1.2 PRIMER**

The module shall then have 2 coats of epoxy primer. The unit is then baked at 140 degree metal temperature for one hour. The module body will then undergo any bodywork or filler that is required at transition(s). A third coat of epoxy primer is applied and cured. The module body will then be final sanded prior to Paint color application. Primer shall be sanded with 320 grit paper to assure flat, orange peel free surface.

### **3.16.3 COLOR, PAINT AND FINISH**

**100% PAINT FILM COVERAGE:** All stages of primer and paint shall cover all surfaces. Hinge mating surfaces on the doors and jambs shall be painted. Bare aluminum and primer only preparation is not

acceptable under door hinges. Doors shall be painted without actuation handles installed and doors removed from body. Paint film thickness to be no less than 4.1 mil thickness. The body shall be painted a single color of White.

**A. PAINT SYSTEM TYPE:**

The paint shall be Poly-Urethane type electrostatic application process without exception.

An electrostatic paint spray system is a highly efficient technology for the application of paint to specific work pieces. Negatively charged atomized paint particles and a grounded work piece create an electrostatic field that draws the paint particle to the work piece, minimizing over spray.

For this technology, an ionizing electrode, typically located at the paint gun atomizer tip, causes paint particles to pick up additional electrons and become negatively charged. As the coating is deposited on the work piece, the charge dissipates through the ground and returns to the power supply, completing the circuit. The electrostatic field influences the path of the paint particles. Because the charged particles are attracted to the grounded work piece, over spray is significantly reduced. Paint particles that pass a work piece can be attracted to and deposited on the back of the piece. This phenomenon is known as "wrap."

**B. TOP COAT (PAINT)**

Entire module shall be degreased. Degreaser shall be applied to manufactures recommendations. Two coats of BTLV High Solids color shall be applied.

**C. CLEAR COAT**

The clear coat shall be manufactured by the same company as the primer and base coat. Two coats of "clear coat" polyurethane shall be applied per the manufacturer's instructions.

**D. 3M POLISHING SYSTEM**

Prior to 100% paint cure, the paint on the ambulance body shall be sanded to 1200 grit and polished flat per 3Ms Perfect-It product program for smooth finish.

**E. CORROSION**

Anti-electrolysis procedures include, but are not limited to the following.

- 1) Ensure all bare substrate is dry and free from contamination.
- 2) If bare substrate is showing signs of corrosion/oxidation, sand and remove. Use 180 grit until area is removed.
- 3) Thoroughly blow off areas to remove sand dust and metal shavings.
- 4) Thoroughly degrease to be pre-primed using the wipe-on, wipe-off method with clean white rags. (Use good quality automotive Degreaser)
- 5) Apply Wash primer CR using a brush to all mated surfaces. Allow to flash for 15 minutes at 70 deg. Fah. Mix wash primer CR 1:1 with wash-hardener.
- 6) Apply Urethane caulk to all mated surfaces before assembly to reduce the possibility of corrosion.

**3.16.4 REFLECTIVE EMBLEMS AND MARKINGS**

See Section 8 for additional information, details, descriptions, and pictures.

**A. STAR OF LIFE**

Manufacturer shall provide one (1) block type, 32 inch, blue Star of Life decal conforming to KKK-A-1822F as amended top markings. It shall be installed on the roof of the module. As per KKK-A-1822F as amended (3.16.4) all other emblems to be installed as per photos (8.1). Contact Sedgwick County EMS at 316-660-7994 before installing decals and lettering if you have questions.

**B. GRAPHICS, STRIPING and DECALS**

All reflective graphics, striping and decals shall be a 3M product. The 3M material will be product number 3M-IJ680CR-48 and will be cut from a 48" roll. The Gloss Laminate for the 3M product will be product number 3M-8518-48 and will also be cut from a 48" roll. The colors used will be as follows;

- Olympic Light Blue, number 7461c
- DOT Blue, number 286c
- Ruby Red, number 1797c
- Lime, number 809c.

Only one splice/overlap in the graphic material will be accepted and that will be directly above the rear entry doors. No cut pieces of filler pieces in the graphic material will be accepted.

All sizes, colors, fonts, and locations are approximations. Proposer shall provide "to scale" drawings of the front, streetside, curbside, and rear of ambulance they propose to build with the above graphics on 8" x 11" paper in their proposal.

The manufacturer shall install such distinctive decals as indicated in attached illustrations (8.1). The lettering/numbering font will match existing ambulances which is represented in the illustrations in 8.1 through 8.6. All decals will be installed prior to the installation of all exterior lighting, door handles, vent covers, camera mounts and windows. No cutting around these types of fixtures will be accepted.

**C. CONSPICUITY STRIPING**

A 6" wide alternating reflective barricade Chevron stripes in an inverted "V" shall be installed on the entire rear of the module. Chevron striping shall alternate between Blue and Lime striping with ½" white reflective material between each blue/lime strip. Reflective stripes shall run at an approximant 45 degree angle and the center or break-over point of the inverted V will be centered on the rear entry doors. The rear window will all also be covered in a 3M material as specified in 8.1 and will not obstruct occupants view from inside the module.

A like safety striping shall be installed on the lower portion of all entry door panels that shall be visible when the rear doors are open. These alternating stripes shall butt up to one another and not overlap.

A 3/4 " white reflective 3M tape shall be applied to both the street side and curb side of the entire ambulance module, including the cab. This tape will outline the cab and module and give a reflective silhouette of the vehicles direction of travel at night.

Each entry and exterior compartment door shall be outlined on the upper, outer and lower door edge with DOT red/white reflective striping that shall be visible by oncoming traffic when the doors are in the open position. This tape shall not hinder the function of the door. The size of the tape is to be approximately .50" wide.

**D. REFLECTIVE PLACARDS**

Six reflectors shall be supplied on the outside of the module body. The reflectors shall be located at skirt line level and the area size shall be at least 3.75 square inches. Each side shall have one AMBER forward reflector and one RED rearward reflector. The rear of the body shall have one RED reflector, located just above the diamond plate kick plate.

### **3.20 WORKMANSHIP**

Defective components shall not be furnished. Parts, equipment, and assemblies, which have been repaired or modified to overcome deficiencies, shall not be furnished without the approval of the County. Welded, bolted, or riveted construction used shall be in accordance with the highest industry standard. Component parts and units shall be manufactured to definite standard dimensions with proper fits, clearances, and uniformity. General appearance of the vehicle shall not show any evidence of poor workmanship.

The following shall be reason for rejection of completed ambulance:

1. Rough, sharp or unfinished edges, burrs, seam, sharp corners, joints, cracks, and dents.
2. Non-uniform panels. Edges that are not radiused, beveled, etc.
3. Paint runs, sags, orange peel, etc., in addition, defects listed in 3.16.2 and any other imperfection or lack of complete coverage.
4. Body panels that are uneven, unsealed, or have voids.
5. Misalignment of body fasteners, glass, light housings, other items with large or uneven gaps, spacing, etc., such as doors, body panels, or hinged panels.
6. Improper body design or interface with the chassis that could cause injury during normal use or maintenance.
7. Improperly fabricated and routed wiring or harness.
8. Improperly supported or secured hoses, wires, wiring harnesses, mechanical controls.
9. Loose, vibrating, abrading body parts, components, subassemblies, hoses, and wiring harnesses or trim.
10. Interference of chassis components, body parts, doors, etc.
11. Leaks of any fuel or fluid lines.
12. Noise or vibration, etc.
13. Sagging, non-form fitting upholstery or padding.
14. Incomplete or incorrect application of rust proofing.
15. Inappropriate or incorrect use of hardware, fasteners, components, or methods of constructions.
16. Incomplete or improper welding.
17. Visual deformities.
18. Lack of uniformity and symmetry where applicable.
19. Unsealed appurtenances or other body components, gaskets, etc.

Any deviation from specification requirements or any other item, whether or not stipulated herein, that affects form, fit, function, durability, reliability, safety, performance or appearance shall be cause for rejection of completed ambulance.

## **4. QUALITY ASSURANCE PROVISIONS AND INSPECTIONS**

### **4.1 RESPONSIBILITY FOR INSPECTION AND TESTS**

The manufacturer is responsible for the performance of all inspections and test requirements specified. The manufacturer may use their own or any other facilities suitable for the pre-delivery and acceptance inspections unless disapproved by the purchaser. The County reserves the right to perform any of the inspections and tests set forth in the specification where such inspections are deemed necessary to assure supplies and service conform to the specification and contract. The manufacturer shall provide the purchaser's inspection representatives with the manufacturer's readily available instruments and all such assistance as they may find necessary

#### **4.1.1 VERIFICATION INSPECTION**

Quality assurance operations performed by the manufacturer will be subject to County verification at unscheduled intervals. Verification will consist of observation of the operations to determine that practices, methods, and procedures of the manufacturer's inspection are being properly applied. Failure

of the manufacturer to promptly correct observed deficiencies shall be cause for suspension of acceptance of the ambulance(s) until conformance to specification criteria has been demonstrated.

## **4.2 INSPECTION FOR ACCEPTANCE**

### **4.2.1 QUALITY CONFORMANCE INSPECTION**

Ambulance(s) shall be subject to inspection at mid-point production and upon completion prior to shipment from manufacturer's factory or assembly plant and may consist of the following:

#### **A. Workmanship Inspection**

See 3.20

#### **B. Quality of Conformance Inspection**

See 3.20

#### **C. First Production Ambulance Inspection**

See 3.20

### **4.2.4 INSPECTIONS AND PREDELIVERY EXAMINATION**

#### **A. CONSTRUCTION AND INSPECTION MEETING**

Following the award of the contract, the successful Proposer shall be required to host a pre-construction meeting, mid-point inspection and final inspection to be held at the manufacturing plant. Minimum mandatory representatives from the manufacturer include: sales representative, production manager, engineering support, customer order team member and CAD technician. The pre-construction meeting shall take place no later than 30 days following the award of the contract. A mid-point inspection trip shall be scheduled so that the inspection coincides to when cabinets are to be installed in the first unit being built. A final inspection trip shall be scheduled upon completion of all ordered units prior to delivery to Sedgwick County. All required personnel shall be in attendance.

#### **B. INSPECTION EXPENSES**

The expenses of the pre-construction meeting, mid-point and final inspection trips and personnel shall be the manufacturers. These expenses shall be limited to round trip coach class jet/turbo prop service airfare if more than 400 miles from Sedgwick County, lodging and 3 meals per day for a minimum of three days, two nights and local transportation for no more than three (3) persons, as applicable.

If the manufacture is less than 400 miles from Sedgwick County, a non-public ground transportation will be provided by the manufacturer along with lodging and 3 meals per day for a minimum of three days, two nights and local transportation for no more than three (3) persons, as applicable.

#### **C. FINAL DELIVERY**

Following approval by the County's representative(s) at the final inspection, the manufacturer shall arrange in a timely manner for the ambulance(s) to be delivered, inspected and accepted at the Sedgwick County Fleet Management, 1021 Stillwell in Wichita, KS 67213, (316) 660-7477. All delivery expenses shall be the responsibility of the contractor/supplier. The vehicles Invoice should be delivered with the ambulance.

At final inspection the County's representatives will provide the manufacture with a list of items found defective. The manufacture will correct the defective items before the ambulance(s) are delivered. If a defective item is not repaired to the County's satisfaction before leaving the plant the Manufacture or Dealer service agent will be required to make needed repairs at Sedgwick County facilities. All costs

involved with sending a representative to Sedgwick County will be on the Manufacture. All repairs must be made within 7 days of notice from Sedgwick County.

- D. All pre-construction, mid-point and final inspection trip costs shall be shown in the submitted proposal as a separate line item, unique from the cost of the completed ambulance.

## **6. NOTES**

### **6.1 INTENDED USE OF SPECIFICATION**

#### **6.1.1 CONFLICT BETWEEN KKK AND THIS DOCUMENT**

In the event of any conflict between this document, KKK-A-1822F, and the manufacturer production order, this document shall take precedence as it has been prepared to reflect the actual requirements of the County and will exceed KKK-A-1822F requirements.

#### **6.1.2 PRECAUTIONS AND OBSERVATIONS**

Proposers should read the entire document in order to be knowledgeable of what type of ambulance and equipment are required. Proposers are cautioned to include all information, drawings, etc. required herein and to answer all questions required. Failure to comply may be cause to reject the Proposer's proposal.

### **6.2 WARRANTY**

The successful manufacturer shall provide at least a twelve (12) month/12,000 mile warranty on the vehicle which covers defective parts and/or components, the improper choice of materials, parts, and/or components, improper design or engineering, and poor or improper workmanship or quality control techniques. The warranty shall cover the complete vehicle and shall include all costs for labor and parts or materials that are required to correct all deficiencies.

There shall be provided a ten (10) year electrical warranty that covers all conversion circuit boards, harnesses, switches, circuit breakers, and relays.

There shall be provided a minimum of a twenty (20) year transferable modular body structural warranty. The term transferable is to cover the transfer of the warranty to a second purchaser should the department sell this unit later. The structural warranty period shall also remain in effect should the modular body be remounted onto a new chassis performed at a service center authorized by the original manufacturer.

There shall be no less than a seven (7) year/70,000 mile paint warranty.

All manufacturers warranties that comes with the Ford E-450 chassis shall transfer ownership to Sedgwick County.

### **6.3 REPAIR PARTS AND SERVICE**

As continuous operation of the vehicle contemplated by this specification is of utmost importance, it is necessary that the successful Proposer be in a position to render prompt service and to furnish replacement parts. The Proposer shall indicate its ability and the ability of the manufacturer to service these needs. This shall include a detail of how and who will handle warranty, and where. Also, the manufacturer shall submit in this proposal a complete list of spare parts and components they will provide at time of delivery to the County.

A complete set of service manuals and as built specifications shall be supplied by the contractors/suppliers. These include Electrical Troubleshooting Manual, Light Truck Service Manual Set, Power train



Control/Emissions Diagnosis, or equal for the current model year chassis. Either hard copy manuals or CD-ROM is acceptable.

#### **6.4 STATEMENT OF ORIGIN/BILL OF SALE**

A manufacturer's statement of origin showing the applicable transfer information is required for each vehicle procured under this specification. It shall be the responsibility of the manufacturer or authorized representative to contact the Purchasing Director of Sedgwick County Kansas, 525 N. Main, Suite 823, Wichita, Kansas 67203, (316) 660-7255, upon completion of the ambulance(s) and prior to delivery. The Purchasing Director shall make the appropriate arrangements for payment and transfer of documents upon delivery of ambulance(s).

#### **6.6 REFERENCE GUIDES AND HANDBOOK**

The handbook and all material referenced in this specification for the model ambulance furnished shall be provided in an 8.5 x 11" 3-ring hard cover binder, inscribed with the complete address and telephone number of the manufacturer and shall contain the following:

- A.** Table of contents.
- B.** Copy of supplies pro-forma invoice/date of delivery including chassis.
- C.** Copy of chassis manufacturer's warranty and owner's manual.
- D.** Final stage manufacturer's operating and servicing instructions for the entire ambulance, components, devices and equipment aboard, etc; including each equipment manufacturer's data.
- E.** Manufacturer's "Star of Life" certification of compliance statement.
- F.** QVM Certificate.
- G.** Vehicle weights including front axle, rear axle and total weight.
- H.** A reference handbook for the ambulance shall be provided in an 8.5" x 11" 3-ring hard cover loose-leaf binder. It shall contain copies of the chassis manufacturer's warranties and owner's manual, copies of the ambulance manufacturer's warranties and operating/service instructions, component manufacturer's equipment information, installation, operating, service instructions, warranties, etc., and a complete wiring diagram or schematic with circuits and components clearly and accurately labeled.
- I.** To provide for continued quality operations of the new ambulance and timely information regarding the vehicles multiplexing electrical system, including V-MUX diagnostics, the manufacturer shall provide a compact disc with the basic electrical schematics for this emergency vehicle.

#### **6.7 OPERATING INSTRUCTIONS**

To provide a safe working environment for emergency medical technicians to provide care of patients, this emergency vehicle must be operated in the safest manner possible. To provide proper training for all operators of this emergency vehicle, a professionally produced operations DVD shall be included with the vehicle at the time of delivery. The Digital Video Disc (DVD) shall present all aspects of the operation of the vehicle including front and rear LX-1 display operation; daily checkout and maintenance procedures; location of and precautions about the main electrical panel and components. The authorized representative of the manufacturer shall present the DVD and review its contents with

the potential operators of the vehicle and shall answer any questions regarding its optional features and safe and correct operation.

## **7. SURETIES, INSURANCE, AND EXCEPTIONS**

### **7.1 BID SURETY**

A bid surety in the form of a cashier's check or valid bond issued by a recognized and acceptable bonding agency, for an amount equal to five (5) percent of the total amount bid is required with the proposal. The bid surety of the successful proposer shall be retained until an acceptable contract is entered into within a reasonable time frame. Failure to enter into such contract shall be cause for forfeiture of surety.

### **7.2 PERFORMANCE SURETY**

The successful proposer shall be required to post a performance surety in the form of a cashier's check or valid bond issued by a recognized and acceptable bonding agency, for an amount equal to one hundred percent (100%) of the total amount proposed. Failure to provide the ambulance(s) as specified shall be cause for forfeit of surety. Surety will be returned to the successful proposer upon receipt of a properly executed contract. Sureties of unsuccessful vendors shall be returned upon award of contract.

### **7.3 PRODUCT LIABILITY INSURANCE**

To protect the County in the event of litigation that might arise from a product failure induced incident, each Proposer shall supply with each proposal proof that the manufacturer of the ambulance(s) has valid liability insurance coverage with a minimum limit of ten million dollars (\$10,000,000).

### **7.4 LOCATION, COMMENCEMENT AND SUBSTANTIAL COMPLETION**

Proposers shall state in their proposal the date of delivery on said vehicles. An acceptable time frame shall not exceed 170 calendar days from the Proposer's receipt of the County Purchase Order. Proposers shall also state in their proposal the physical manufacturing plant location where the County vehicles shall be built.

### **7.5 EXCEPTIONS TO SPECIFICATIONS**

Full Disclosure of any and all exceptions taken by Proposer to any portions or item(s) within this specification must be listed individually and specific details given on separate sheet(s). Failure to comply shall be cause to reject the Proposer's proposal.

## **8. STRIPES, LETTERING AND DECALS**

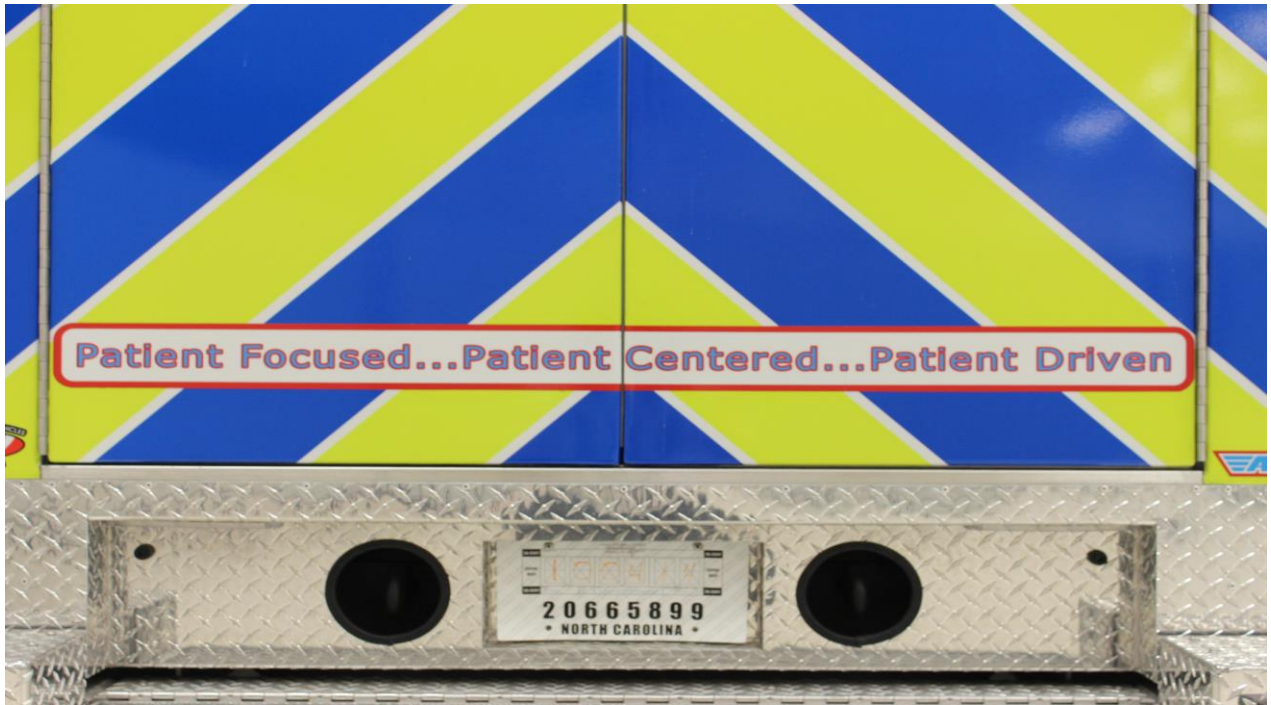
### **8.1 REFLECTIVE GRAPHICS**

All reflective graphics, striping and decals shall be a 3M product. The 3M material will be product number 3M-IJ680CR-48 and will be cut from a 48" roll. The Gloss Laminate for the 3M product will be product number 3M-8518-48 and will also be cut from a 48" roll. The colors used will be Olympic Light Blue, number 7461c, DOT Blue, number 286c, Ruby Red, number 1797c and Lime, number 809c. Only one splice in the graphic material will be accepted and that will be directly above the rear entry doors. No cut pieces of filler pieces in the graphic material will be accepted.

All sizes, colors, fonts, and locations are approximations. Proposer shall provide "to scale" drawings of the front, streetside, curbside, and rear of ambulance they propose to build with the above graphics and stripes on 8" x 11" paper in their proposal.

## 8.2 REAR OF VEHICLE

**Patient Focused...Patient Centered...Patient Driven** banner in high reflective blue/red lettering in white backdrop. It is affixed and centered across the lower portion of the rear entry doors.



**Patient Focused...Patient Centered...Patient Driven**



One (1) KKK 12" standard SOL decal on the curb side rear module, between the brake and blue LED light.  
One (1) Sedgwick County EMS logo/crest decal on the street side of rear module. Aligned between the brake light and the blue LED light.

### **SOL and EMS Logo**

A 6" wide alternating reflective barricade Chevron stripes in an inverted "V" shall be installed on the entire rear of the module. Chevron striping shall alternate between Blue and Lime striping with ½" white reflective material between each blue/lime stripe. Reflective stripes shall run at an approximant 45 degree angle. The rear window will all also be covered in a 3M material as specified in 8.1 and will not obstruct occupants view from inside the module.



**Chevron Stripes**

### **8.3 INSIDE OF ENTRANCE DOORS/COMPARTMENT DOORS**

The inside of entry doors shall have barricade Chevron reflective tape stripes of the same size as the exterior, alternating between Ruby Red and White reflective stripes on the lower one-half of the inside of all three (3) entry doors.

**Rear Doors**





**Curbside  
Door**

The inside of all entrance and compartment doors shall have the Ruby Red and White reflective DOT tape applied to the perimeter of the door.

The reflective decals on all entrance and compartment doors shall wrap all door edges, leading up to the weather stripping, door strikes and mullions.



**Door Edges**



Door Strike/Mullion

#### 8.4 STREET SIDE OF VEHICLE

SEDGWICK COUNTY EMS logo (Street Side) will be horizontally aligned between the roof line and side compartment doors and vertically aligned in the center of the module. This will incorporate the departments crest on one side and a moving star of life on the other. All decals will be in reflective material as specified in 8.1.







**Street Side**

Street Side view of Ambulance. The module and cab graphics are to match what is illustrated. The street side upper left (front of module), the front upper curb side and the curb side upper left (rear of module) will have the Sedgwick County designated regional number. The rear of the module will have the Sedgwick County designated regional number centered above the rear entry doors. The regional number will be a minimum of 6" in height.



**Street Side Cab Door**

Both the driver's side and passengers side cab doors will have "Sedgwick County...Working for you" on the upper portion of the door. The official Sedgwick County Logo will be centered and the word "Paramedic" will be on the lower portion of each door.

## 8.5 CURB SIDE OF VEHICLE

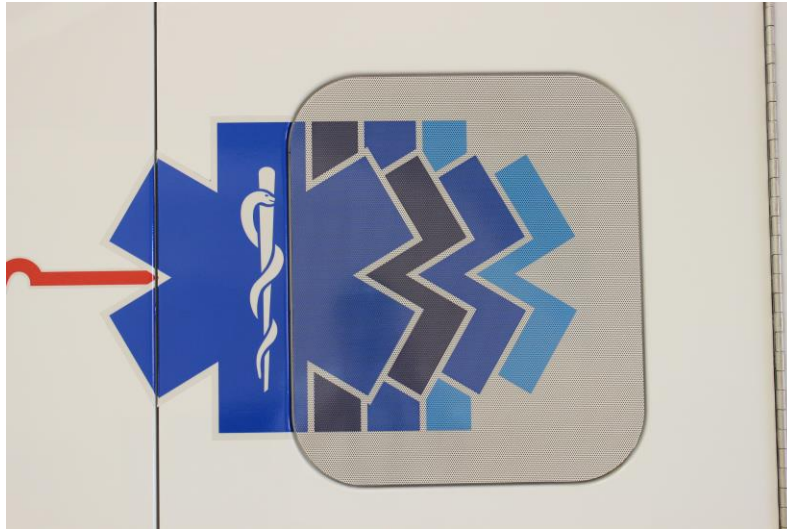


SEDGWICK COUNTY EMS logo (Curb Side) will be horizontally aligned similar to how the street side is aligned and will follow the same dimensions it is offset from the top roof line. The logo will be evenly spaced vertically between the rear curbside compartment (Spine Board) door opening and to forward most part of the curbside walk through door window. This will incorporate the departments crest on one side and a moving star of life on the other. All decals will be in reflective material as specified in 8.1



**Curb Side View**

Curb Side view of Ambulance. The module and cab graphics are to match what is illustrated. The street side upper left (front of module), the front upper curb side and the curb side upper left (rear of module) will have the Sedgwick County designated regional number. The rear of the module will have the Sedgwick County designated regional number above centered above the rear entry doors. The regional number will be a minimum of 6" in height.



**Moving Star Logo**

The moving star portion of the Sedgwick County EMS logo will cover the window of the curb side entry door. The decal will cover the entire window will all also be a 3M material as specified in 8.1. This window covering will not obstruct occupants view from inside the module.



**Curb Side Cab Door**

Both the driver's side and passengers side cab doors will have "Sedgwick County...Working for you" on the upper portion of the door. The official Sedgwick County Logo will be centered and the word "Paramedic" will be on the lower portion of each door.

## 8.6 DOT REFLECTIVE TAPE

A DOT 3/4 " white reflective 3M tape shall be applied to both the street side and curb side of the entire ambulance. This tape will outline the cab and module and give a reflective silhouette of the vehicles direction of travel at night.



¾" White Reflective Outline

## 8.7 ROOF OF VEHICLE

One (1) 32" Block style KKK Star of Life reflective decal shall be affixed to the center of the modules roof.



**Roof SOL**

## **8.8 FRONT OF VEHICLE**

SEDGWICK COUNTY EMS is a 4" high and 60" wide lettering in reflective 3M blue with reflective red outline. The decal is centered in the front of the module and between the lower edge of the LED emergency lights and the peak of the cab roofline.



Module Front

Reverse AMBULANCE is a 4" high in reflective blue with a reflective red outline. It includes a 6" KKK standard SOL decals on either side of the word "AMBULANCE".



Reverse Ambulance