ORDINANCE NO. 7980-105

AN ORDINANCE
REGULATING AMBULANCE SERVICE

WHEREAS, it is in the best interests of the health, safety, and welfare of residents and others in the City of Urbana to license and regulate the operation of ambulances and ambulance services within the City; and

WHEREAS, it is in the best interests of the health, safety and welfare of residents and others in the City to provide standards for the regulation of ambulances, ambulance drivers, attendants, attendant-drivers, and condition of equipment; and

WHEREAS, it is in the best interests of the health, safety, and welfare of residents and others in the City to provide for renewal and revocation of licenses concerning the operation of ambulances and ambulance services and to provide for disclosure relative to emergency ambulance operations; and

WHEREAS, the City of Urbana is a home rule unit under the 1970 Illinois Constitution and may exercise any power and perform any function pertaining to its government and affairs including, but not limited to the power to regulate for the protection of the public health, safety, morals, and welfare; and

WHEREAS, Sections 1-2-4 and 1-3-2 of the Illinois Municipal Code, and Section 1002 of Chapter 85, Illinois Revised Statutes, provide, that where rules and regulations or any part thereof have been printed in book or pamphlet form, such rules and regulations or portions thereof may be adopted by reference; and

WHEREAS, three (3) copies of the pamphlet containing the Illinois Department of Public Health Mobile Intensive Care Program Rules and Regulations have been on file in the office of the City Clerk, for use and examination by the public at least thirty (30) days prior to their adoption as provided by said Code; and

WHEREAS, the City Council of the City of Urbana intends to adopt and to incorporate by reference the Illinois Department of Public Health Mobile Intensive Care Program Rules and Regulations, as now or hereafter amended.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF URBANA, ILLINOIS, as follows:

Section 1. Definitions.

For the purpose of this Ordinance, the following words shall have the meanings set out below, unless otherwise specified:

(a) "Ambulance" means any motor vehicle that is designed and constructed, equipped, and intended to be used for, and maintained or operated for, and used for, the transportation of patients in emergency situations.

(b) "Ambulance attendant" or "attendant" means a trained and qualified individual responsible for the interim care of the patient at the scene of the emergency and during transit in the ambulance.

(c) "Ambulance service" means the commercial activity, maintenance, operation, or use on the streets, alleys, or any public way within the City of an ambulance which responds to emergency calls for the transportation of persons who are sick, injured, wounded, or otherwise incapacitated or helpless at the time of the dispatch of the ambulance, but does not include the use of a vehicle especially equipped and used for the care and treatment of premature and high-risk infants exclusively for the transportation of a newborn infant from the place of birth to a hospital facility.

(d) "Areawide Hospital Emergency Services Committee" means the Committee mandated by the Illinois Department of Public Health's Areawide Hospital Emergency Services Program; composed of a nurse, a doctor, and an administrator from each of the hospitals in Champaign and Ford Counties, representatives (Fire Chiefs) from the Cities of Champaign and Urbana, ambulance service providers, and other interested organizations; and charged with the responsibility for maintaining a satisfactory system of emergency medical services in the community.

(e) "Certificate of safety, second division vehicle, official testing station, and safety devices and appliance" shall have the same meaning as that ascribed to said terms by the applicable provisions of the Illinois Vehicle Code, as now or hereafter amended.

(f) "Champaign-Urbana Mobile Intensive Care Program" means the sub-committee of the Advanced Life Support/Mobile Intensive Care System, as established by provisions of the Illinois Department of Public Health; and composed of representatives from the sponsoring hospital, Mercy Hospital, associated members Burnham Hospital, Carle Hospital, and McKinley Hospital, Cole Hospital, the local ambulance service providers, and the Cities of Champaign and Urbana.

(g) "Hospital" means any institution, place, building, or agency, public or private, whether organized for profit or not, devoted primarily to the maintenance and operation of facilities for the diagnosis and treatment or care of two or more unrelated persons admitted for overnight stay or longer in order to obtain medical care of illness, disease, injury, infirmity, or deformity and is licensed as a hospital by the Illinois Department of Public Health.

(h) "Invalid coach" means a motor vehicle used exclusively for the transportation of non-ambulatory patients to or from a hospital, nursing home, or the patient's home in non-emergency situations or in emergency situations as a backup when sufficient emergency vehicles are not available, but shall not mean or include any taxi cab as defined by the Urbana City Code and licensed as such by the City of Urbana.

(i) "Invalid coach service" means the commercial operation within the City in the transportation by invalid coach, by prior appointment, of non-ambulatory invalid individuals not requiring emergency medical care in transit, but shall not mean or include any taxi cab service as defined by the Urbana City Code and licensed as such by the City of Urbana.

(j) "Illinois Specifications for Ambulances" means the Illinois Specifications for Ambulances, ILL-A-1822, as now or hereafter amended, a copy of which is attached hereto and made a part thereof.

(k) "Mobile Intensive Care Unit" means an ambulance so staffed and equipped as to meet requirements of the Illinois Department of Public Health Mobile Intensive Care Unit Program Rules and Regulations, as now or hereafter amended, such Rules and Regulations as may be established by the Champaign-Urbana Mobile Intensive Care Program and the Areawide Hospital Emergency Services Committee.

(l) "Patient" means an individual who is or has been sick, injured, wounded, or otherwise incapacitated or helpless at the time of the dispatch of the ambulance.

Section 2. License Required.

A. No person, either as owner, agent or otherwise, shall furnish, operate, conduct, maintain, advertise, be engaged in, or hold him or herself out to be engaged in the operation of an ambulance service or invalid coach service in the City unless that person holds a valid current license issued pursuant to this Ordinance for that particular service. An ambulance service or invalid coach service shall not operate an ambulance, invalid coach service, or mobile intensive care unit without a valid current license issued and displayed on each ambulance, invalid coach or mobile intensive care unit. However, in the case of a major catastrophe, vehicles operated by persons not licensed by the City may be used to render ambulance service where the number of licensed ambulances are insufficient to render the required services. An invalid coach service may also render services in case of major catastrophies or extreme emergencies as a backup service when there are insufficient numbers of licensed ambulances. When an invalid coach is used in an emergency situation, it shall have a driver and an attendant as required for ambulances by this Ordinance.

B. Provided, that in the case of an ambulance service or invalid coach service which is regularly doing business outside the City limits of the City of Urbana and only sending ambulances, invalid coaches, and mobile intensive care units through or into the City to transport patients to or from outside the City limits to or from hospitals or other medical care facilities located in the City, no service license or ambulance licenses shall be required.

C. Except as may be exempted above, no vehicle responding to calls within the City shall bear ambulance, invalid coach, or mobile intensive care unit identification insignia and flashing lights or warning signal devices unless it is operated by an ambulance service or invalid coach service licensed pursuant to this Ordinance.

Section 3. License Application.

A. Every applicant for a license to operate an ambulance service or an invalid coach service shall file an application with the Comptroller on forms available in the Office of the Comptroller. The applications shall include the following:

(1) The name and address of the applicant;

(2) The trade or other assumed name, if any, under which the applicant does business or ~~pur~~pro poses to do business;

(3) The business location and address of the place or places from which the ambulance or invalid coach service operates or is intended to be operated including storage, dispatch, and maintenance facilities;

(4) A description of each ambulance, invalid coach, or mobile intensive care unit which the applicant operates or intends to operate within the license year, including the make, model, year of manufacture, serial number, the length of time the ambulance, invalid coach, or mobile intensive care unit has been in use, the license numbers, the color scheme, insignia, name, monogram or other distinguishing characteristics to be used to designate applicant's ambulance, invalid coach, or mobile intensive care unit, and any unusual modifications of original chassis to meet basic requirements for an ambulance, invalid coach, or mobile intensive care unit;

(5) Such other information as may be reasonably required for the administration of the provisions of this Ordinance.

B. All applications shall be accompanied by a photocopy of the current valid motor vehicle registration for each ambulance, invalid coach, or mobile intensive care unit listed in the application.

C. The service license for the ambulance service or invalid coach service, and the ambulance licenses for the ambulances, invalid coaches, and mobile intensive care units shall be issued by the Comptroller following a favorable inspection report of the ambulances, invalid coaches, and mobile intensive care units, and a determination that all other requirements of this Article have been or are being met. No ambulance service or invalid coach service shall do business, and no ambulance, invalid coach, or mobile intensive care unit shall be operated without a valid current license issued pursuant to and in accordance with the provisions of this Ordinance.

D. An ambulance license for an ambulance, invalid coach, or mobile intensive care unit which is retired or replaced during the license year shall not be transferred to a new or replacement vehicle.

E. An ambulance service or invalid coach service may receive a service license whether or not all its ambulances, invalid coaches, or mobile intensive care units qualify for licenses provided the ambulance service or invalid coach service meets the minimum requirements set forth in this Ordinance.

Section 4. License Fee.

All applications for licenses or renewals thereof shall be accompanied by payment of the applicable annual license fee as fixed and established from time to time by the City Council in Section 18.22, entitled "Schedule of Fees", of Chapter 18, entitled "Licenses", of the Urbana City Code, as amended. All licenses shall commence on the first day of July of each year and terminate on the last day of June of the following year, and the fee for such license shall be paid yearly or for any fraction thereof.

Section 5. Inspections.

A. Upon receipt of an application for an original or renewal license for an ambulance or invalid coach service, the Comptroller shall immediately refer the application to the Fire Chief. The Fire Chief, or such members of the Department designated by the Fire Chief, shall inspect the ambulances, invalid coaches, or mobile intensive care units listed in the application, and shall report in writing to the Comptroller within ten (10) days of referral as to whether the ambulances, invalid coaches, or mobile intensive care units comply with Sections 6 and 8 of this Ordinance. No license for an ambulance, invalid coach, or mobile intensive care unit may be issued without a favorable inspection report.

B. Whenever an ambulance service or invalid coach service acquires a new ambulance, invalid coach, or mobile intensive care unit, the service shall inform the Comptroller and provide supporting documents as required in Section 3. No such ambulance, invalid coach, or mobile intensive care unit shall be used by a service without an inspection and a favorable report made to the Comptroller and a license being issued pursuant to this Section.

Section 6. Design and Equipment Standards.

A. Ambulances shall, at all times, meet the following standards:

(1) Be equipped with a functioning two-way communication system capable of maintaining communication between the vehicle and its control center and between the vehicle and each hospital within the city from any location within the City;

(2) Be supplied with equipment and supplies for dressing wounds, splinting fractures, controlling hemorrhage, providing oxygen, combatting poison, and with devices and equipment for light access and extrication, for removing patients to, and transporting them in, the ambulance and invalid coach service, which said equipment and supplies shall at the minimum, be those listed in the Illinois Specifications for Ambulances, and required by the Areawide Hospital Emergency Services Committee.

(3) Be equipped with the safety devices and equipment required for second division vehicles pursuant to the provisions of the Illinois Vehicle Code, as now or hereafter amended;

(4) Be periodically inspected and tested as required for second division vehicles pursuant to the provisions of the Illinois Vehicle Code, as now or hereafter amended, and display a current valid certificate of safety on the body of the vehicle as required for second division vehicles under the Illinois Vehicle Code, as now or hereafter amended;

(5) Be maintained in a clean, safe, and sanitary manner;

(6) Be designed in accordance with the Illinois Specifications for Ambulances, except that this requirement need not be met during a major catastrophe or extreme emergency where the number of licensed ambulances is not sufficient to meet the needs of the community during the catastrophe or emergency.

B. Invalid coaches shall, at all times, meet and comply with items (1), (3), (4), and (5) of the standards herein established for ambulances in subsection A above and shall also be furnished and equipped so as to provide safe and comfortable transportation, and so as to provide such care, supervision, attendance, appliances, and devices as the condition or debility that the patient may then require.

Section 7. Qualifications of Drivers and Attendants of Ambulances and Invalid Coaches.

A. Each licensed ambulance service shall provide on each ambulance in service in the City at least two (2) persons certified as Emergency Medical Technicians (EMT) and licensed as such by the State of Illinois Department of Public Health.

B. Each licensed invalid coach service shall be staffed with a driver and an attendant at least one of which is certified as an Emergency Medical Technician (EMT) and licensed as such by the State of Illinois Department of Public Health.

Section 8. Mobile Intensive Care Units and Personnel.

Each licensed ambulance service shall provide at least one mobile intensive care unit within eighteen (18) months of first being licensed under this Ordinance. All mobile intensive care units and personnel shall comply with the Illinois Department of Public Health Mobile Intensive Care Program Rules and Regulations, as now or hereafter amended, and such rules and regulations as may be established by the Champaign-Urbana Mobile Intensive Care Program. The vehicle used as a mobile intensive care unit may be one of the ambulances required by this Ordinance, and does not need to be an additional vehicle.

Section 9. Records.

A. Each licensed ambulance service or invalid coach service shall keep an adequate record of its equipment and the maintenance thereof, a log of calls and responses, and records regarding its personnel, and file monthly reports as required.

B. Each licensed ambulance service or invalid coach service shall promptly report to the Comptroller any change of vehicles, personnel or location, and any substantial change in operating procedures, from that contained in the application for the license currently in effect. Supporting documents or data shall accompany this report.

Section 10. Cooperation.

A. All licensed ambulance services and invalid coach services and personnel shall cooperate with other public safety and emergency services operating within the City, both generally and specifically at the scene of an emergency.

B. No licensed ambulance service or invalid coach service or personnel shall respond to a call for service directed to another service unless specifically requested to do so by either the City or ambulance service originally called.

Section 11. Monitoring Calls.

No licensed ambulance service or invalid coach service shall respond to a call originated by monitoring police departmental or fire departmental radio communications unless a specific request from the concerned department, directed to the particular service, is made.

Section 12. Review and Evaluation of Ambulance and Invalid Coach Service.

The Areawide Emergency Services Committee shall act in a medical advisory capacity to the Mayor and shall have the following duties and functions as related to the review and evaluation of ambulance and invalid coach services licensed pursuant to this Article:

A. Review all monthly activity reports and supporting documents submitted by each ambulance service and invalid coach service, in accordance with Section 9, and require the filing and preparation of information in addition to that required herein.

B. Conduct evaluations of each ambulance service and invalid coach service at least every year, and pursuant to such evaluation, make recommendations to the Mayor.

C. Advise the Mayor on matters representing possible violations of the provisions of this Ordinance that might constitute grounds for suspension or revocation of the service license or ambulance license, in accordance with Section 13.

D. Develop an appeal process, including necessary form and procedures, to hear complaints and disagreements between the ambulance and invalid coach services and the users of such services relating to the time of response, the manner of treatment, and quality of care. This appeal process shall be substantially as follows:

(1) The user submits the complaint to the Mayor or his/her designate.

(2) The Mayor submits the complaint to the Areawide Hospital Emergency Services Committee.

(3) The Committee reviews the complaint and transmits its findings to the Mayor and the City Council.

Section 13. Suspension and Revocation of License.

In addition to any penalty that may be provided in this Ordinance, violation of any of the provisions hereof, or a failure to comply with any of the standards or qualifications provided herein after reasonable notice and an opportunity to so comply, may be grounds for suspension or revocation of the license in accordance with Chapter 18 of the Urbana City Code.

Section 14. Rules and Regulations.

The Mayor is authorized to make such reasonable rules and regulations not contrary to or in conflict with the provisions of this Ordinance, as may be deemed necessary or desirable to implement, clarify, refine, or enforce the provisions hereof.

Section 15. Penalty.

Any person, firm, or corporation that violates any provision of this Ordinance shall, upon conviction, be fined not to exceed five hundred dollars ($500.00), and each day a violation is allowed to continue may be considered a separate offense.

This Ordinance shall be in full force and effect from and after its passage and publication as required by law, or after the passage and publication as required by law of a similar ordinance duly passed and adopted by the City of Champaign, Champaign County, Illinois, whichever is the later date.

This Ordinance is hereby passed by the affirmative vote, the "ayes" and "nays" being called, of a majority of the members of the Council of the City of Urbana, Illinois, at a regular meeting of said Council on the 19th day of May, 1980.

PASSED by the City Council this 19th day of May, 1980.

Ruth S. Brookens
Ruth S. Brookens, City Clerk

APPROVED by the Mayor this 28th day of May, 1980.

Jeffrey T. Markland
Jeffrey T. Markland, Mayor

CERTIFICATE OF PUBLICATION

I, RUTH S. BROOKENS, City Clerk, City of Urbana, Illinois, do herewith certify that I caused the above Ordinance to be duly published in pamphlet form on the 2nd day of June, 1980.

Ruth S. Brookens
Ruth S. Brookens, City Clerk

7980-105

THIS IS THE ATTACHMENT WHICH IS REFERRED TO IN ORDINANCE NO. 7980-105 AND IS INCORPORATED THEREIN BY REFERENCE.

Ruth S. Brookens

Ruth S. Brookens, City Clerk

June 2, 1980

Date

Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois/62764

October 1, 1977

Attached is the Illinois Specification for Ambulances, ILL-A-1822, Revised October 1, 1977.

Adherence to the details of this specification is mandatory when the vehicle being purchased is to be bought with Federal Highway Safety Funds.

It is requested that you review these specifications carefully in that while they appear identical to the Federal GSA Specification KKK-A-1822, there are significant changes.

In matters regarding interpretation or types of equipment to be supplied, you are directed to contact the Division of Emergency Medical Services & Highway Safety, Illinois Department of Public Health, 525 West Jefferson, Springfield, Illinois 62761, or call (217) 785-2080.

SPECIAL NOTE TO VENDORS

It is requested that you call or contact the above address prior to submission of bids for ambulances citing Specification ILL-A-1822. This will enable us to assist you in your bid preparation.

STATE OF ILLINOIS SPECIFICATION

AMBULANCE

Emergency Medical Care Vehicle

This specification was approved by the Director, Division of Traffic Safety, Illinois Department of Transportation, for the use of the State and local governments.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers new commercially produced surface emergency medical care vehicles, hereinafter referred to as ambulance, or vehicle. The ambulance is self-propelled, front or rear wheel driven (4 x 2); designed, constructed, and equipped to afford maximum safety and comfort to patients and personnel (for intended use, see section 6). Vehicles procured under this specification shall be warranted by the manufacturer or contractor as specified in the procurement document.

1.2 Classification.

1.2.1 Ambulance types, classes, and floor plans. Ambulances covered by this specification shall be of the following, as specified (see 6.2):

Type I - Conventional, cab-chassis with modular ambulance body (3.1.2 and figure 1).

Class I - Two rear wheel driven (4 x 2).

Floor Plan A - Elevating cot and squad bench (3.1.5: 3.11.4) standard.

Type II - Standard van, forward control (FC) integral cab-body ambulance (3.1.3 and figure 2).

Class I - Two rear wheel driven (4 x 2).

Floor Plan A - Elevating cot and squad bench (3.1.5; 3.11.4) standard.

* Replacement of funded ambulances only (Not applying for re-funding).

Type III- Specialty van, forward control (FC) integral cab-body ambulance (3.1.4).

1.3 Standard ambulance. A vehicle in compliance with this specification shall be defined as a standard ambulance. This ambulance is in general accord with the Ambulance Design Criteria of the National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington, D.C., as reported by the Committee on Ambulance Design Criteria, National Research Council, National Academy of Engineering, Washington, D.C.

1.4 Ambulance parameters and options. The requirements as specified hereinafter shall apply to all ambulances covered in this specification unless otherwise shown, annotated, or amended by an authorized directive. Additional options, or alternates may be specified by following the ordering data procedures (see 6.2).

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specifications:

W-B-00131J - Battery, Storage: Vehicular, Ignition, Lighting, and Starting.
L-S-300 - Sheeting and Tape, Reflective, Nonexposed Lens, Adhesive Backing.
RR-C-901 - Cylinders, Compressed Gas; with Valve or Plug and Cap; ICC3aa.
ZZ-I-550 - Inner Tube Pneumatic Tire.

Federal Standards:

Federal Std. No. 297 - Rustproofing of Automotive Vehicles.

Fed. Std. No. 595 - Colors Vol. I.

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

(Single copies of this specification required by activities outside the State Government for bidding purposes are available without charge from Division of Emergency Medical Services & Highway Safety, Illinois Department of Public Health, 535 West Jefferson, Springfield, Illinois 62761.)

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks, and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Standards:

MIL-STD-1223 - Administrative Wheeled Vehicles Treatment, Painting, Undercoating, Identification Marking, Data Plates and Warranty Notice Standards.

MIL-STD-39226 - Cylinder Compressed Gas, DOT spec. 3AA2015, Medical Gases.

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

Laws, Rules and Regulations:

Environmental Protection Agency:

Title 40 CFR, Part 85 - Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines.

U.S. Department of Transportation:

National Highway Traffic Safety Administration
49 CFR 390 - Federal Motor Vehicle Safety Standards (FMVSS)

Federal Highway Administration
49 CFR 571 - Motor Carrier Safety Regulations (MCSR)

(The code of Federal Regulations (CFR) and the Federal Register (FR) are for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC, 20402. When indicated, reprints of certain regulations may be obtained from the Federal agency responsible for issuance thereof.)

2.2 Other Publications. The following documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

Tire and Rim Association Inc. Yearbook

Application for copies should be addressed to The Tire and Rim Association, Inc. 3200 West Market Street, Akron, Ohio 44313

Society of Automotive Engineers (SAE), Inc., Standards and Recommended Practices:

J245 - Engine Rating Code, Spark Ignition.

J551b - Measurement of Electromagnetic Radiation from a Motor Vehicle or Other Internal-Combustion-Powered Vehicle (Excluding Aircraft) (20-1,000MHz).

J552a - External Electromagnetic Radiation Suppressors.

J579a - Seal Beam Headlamp units for Motor Vehicles.

J595b - Flashing Warning Lamps for Authorized Emergency, Maintenance and Service Vehicles.

J598a - Sealed Lighting Units for Construction and Industrial Machinery.

J683a - Tire Chain Clearance.

J689a - Approach, Departure, and Ramp Breakover Angles.

J695a - Turning Ability and Off Tracking.

J845 - Emergency Warning Lamp. 360 Deg.

(Application for copies should be addressed to the Society of Automotive Engineers, Inc., Two Pennsylvania Plaza, New York, New York 10001.)

Static Load Test Code for School Bus Body Structure:

Standard No. 002.

(Application for copies should be addressed to the School Bus Manufacturers Institute, A Division of Truck Body and Equipment Association, Inc., 5530 Wisconsin Avenue, N.W., Washington, DC 20015.)

International Mobile Air Conditioning Association, Inc.:
IMACA Standard 200
(Applications for copies should be addressed to the International Mobile Air Conditioning Association, Inc., 6116 North Central Expressway, Dallas, Texas 75206)

Electronic Industries Association, Standards:
RS152B - Minimum Standards for Land Mobile Communication FM or PM Transmitters.
RS204A - Minimum Standard for Land Mobile Communication FM or PM Receivers.
RS220 - Continuous Tone Controlled Squelch Systems.
RS329 - Minimum Standard for Land Mobile Communication Antennas Part II Mobile Antennas.
RS374 - Land Mobile Selective Signalling Standards.
(Application for copies should be addressed to the Electronic Industries Association, 2001 Eye Street, N.W., Washington, D.C. 20006).

Federal Communications Commission
Medical Communications Service, Title 47, CFR, Part 89, Public Safety Radio Services

Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.

Battery Council International
Battery replacement data book
(Applications for copies should be addressed to Battery Council International, 111 East Wacker Drive, Chicago, Illinois 60601.)

3. REQUIREMENTS

3.1 General Vehicular design, types, and floor plan.

3.1.1 Design. The ambulance and the allied equipment furnished under this specification shall be the manufacturer's current commercial vehicle of the type and class specified. The ambulance shall be complete with the operating accessories as specified herein; furnished with such modifications and attachments as may be necessary and specified 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.

3.1.2 Type I ambulance. Type I vehicle, class I as specified, shall be a chassis furnished with a 2-door conventional cab. Chassis-cab shall be suitable for subsequent mounting of a modular (containerized) transferrable equipped ambulance body conforming to the requirements specified herein.

3.1.3 Type II ambulance. Type II vehicle, class 1, forward control (FC) with engine compartment located between driver and assistant, shall be an integral cab-body standard commercial compact long wheel base van of unitized construction requiring only modifications in height & length, and equipped as specified herein. Modifications must not void or alter chassis manufacturer's warranty.

3.1.4 Deleted - not fundable

3.1.5 Floor plan of patient-technician compartment.
Floor plan "A" loading arrangement shall be provided in the patient's compartment ambulance body proper. All litters shall be loaded with the heads of the patients forward in the vehicle. The following plan of patient-technician potential

loading accommodations shall be furnished.

Floor Plan A - One patient (primary patient) on a wheeled elevating cot and one (secondary patient) lying on a folding stretcher or combination stretcher chair on the squad bench platform; or one primary patient and three secondary seated patients on the squad bench (see 3.11.4), and one seated technician (see 3.10.3).

NOTE: Primary patient must be positioned on the left side of the ambulance. The anatomy of the tracheal bronchial tree is so constructed that the unconscious patient will be less likely to aspirate fluids into his trachea if he is placed on his left side with his right side up.

3.2 Vehicle, ambulance components, equipment and accessories. The emergency medical care vehicle, chassis, ambulance bodies, equipment, devices, medical accessories and electronic equipment to be delivered under this contract shall be standard commercial products, which meet or exceed the requirements of this specification. The ambulance shall comply with all Federal Motor Vehicle Safety Standards, (FMVSS) and Federal Regulations applicable or specified for the year of manufacture. The chassis, components, and optional items shall be as represented in the manufacturer's current technical data, and the ambulance bodies, equipment, and accessories shall be as represented in their respective manufacturer's current technical data. Data shall be limited to specifications and technical materials, identical to that furnished to the authorized company representatives, and shall be on file in appropriate offices of the procuring activity prior to delivery of the item. The ambulance components and equipment need not be the products of the same manufacturers. The supplier shall provide total standardization and inter-changeability between similar vehicles and alike equipment, items, and accessories specified.

3.3 Materials. The materials shall be new and not less than the quality conforming to current engineering and manufacturing practices. Materials shall be free of defects, and suitable for the intended service.

3.4 Vehicle Operation, performance and physical characteristics.

3.4.1 Operation and performance. All requirements as specified in section 3, are minimums and shall be met with the ambulance laden to the Gross Vehicle Weight Rating, and all specified equipment and devices installed and operating at maximum power-consuming condition; i.e., air conditioning, lights, and radio(s). The vehicle shall be capable of operating safely and efficiently under environmental conditions outlined herein or as specified in the invitation for bid, contract, or order.

3.4.2 Temperature conditions. The ambulance, equipment and devices thereon, shall be capable of normal satisfactory performance in ambient temperatures of -30° to 125°F., when serviced in accordance with the manufacturer's recommendation.

3.4.3 Noise and sound level limits, exterior. Unless more stringent sound levels are regulated by the states and municipalities where the ambulance will be based, the exterior noise level produced by the vehicle shall not exceed Federal regulations.

3.4.4 Vehicle performance. The ambulance shall assure a smooth, stable, ride with nominal noise and vibration; with due consideration of road conditions. The

ambulance shall be capable of rapid response, and accelerate to speeds consistent with street traffic and interstate highways.

3.4.5 Brakes. The ambulance as delivered to the user shall comply to performance values required by Federal Motor Vehicle Safety Standards (FMVSS) 106, 116, this specification, and FMVSS 105 when applicable.

3.4.6 Speed. Vehicle shall be capable of a sustained speed of not less than 70 miles per hour (mph) over dry, level, hard-surfaced roads.

3.4.7 Acceleration. Vehicle shall have a minimum average acceleration rate of 2 mph per second for at least 30 seconds. Test shall be in accordance with Federal Motor Vehicle Consumer Information Regulation, 575.106, "Acceleration and Passing Ability" (see 4.4).

3.4.8 Gradeability. Vehicle shall be able to stop and restart three (3) consecutive times during a six (6) minute period while ascending a dry smooth concrete slope having a minimum grade of 30% without stalling or over-heating. Test conditions to be in accordance with Federal Motor Vehicle Consumer Information Regulation, 575.106 (d) conditions and procedures, (1) vehicle, road and ambient conditions, (see 4.4).

3.4.9 Fuel range. The ambulance shall be capable of being operated for at least 150 traveled miles without refueling when operating, under encountered environmental conditions. (see 3.6.4.4 and 4.4.3). Certification may be required.

3.4.10 Fording. The ambulance shall be capable of several two minute fordings test up to 12 inches depth of water while keeping the patient compartment dry. The vehicle shall permit fording without danger of stalling.

3.4.11 Vehicle physical dimensional requirements.

3.4.11.1 Length. Overall length of the ambulance shall not exceed 22 feet including bumpers, but excluding rear step.

3.4.11.2 Width. Overall width of the ambulance shall not exceed 96 inches, for types I and 80 inches for type II, nor be less than the overall width of the rear tires.

3.4.11.3 Height. Overall height of the ambulance at curb weight (3.5.1) shall not exceed 110 inches, including roof mounted equipment, but excluding two-way radio antenna.

3.4.11.4 Ground clearance. The lowest part of the vehicle when loaded to the G.V.W.R. shall have minimum of 6 inches ground clearance. A higher clearance may be specified when necessary for off-highway operations.

3.4.11.5 Angle of approach, ramp breakover, and departure. The vehicle with bumpers and step in place shall have an angle of approach of not less than 16°, angle of ramp breakover of not less than 10°, and an angle of departure of not less than 10° when loaded to G.V.W.R. and measured in accordance with SAE J689a.

3.4.11.6 Turning diameter. Righthand and lefthand turning diameters of the vehicle shall not exceed 2.9 feet per foot of vehicle length in accordance with SAE J695a. Both turning diameters shall be measured at the body corners.

3.5 Vehicle weight ratings and payload.

3.5.1 Curb weight. Curb weight shall include the weight of the complete ambulance; chassis, cab, and body; including all permanently attached or mounted devices, equipment, oxygen cylinders, basic accessories; full complement of fuel, lubricants, and coolant.

3.5.2 Payload allowance. A minimum of 1,000 pounds payload allowance shall be provided over and above the curb weight of the vehicle as specified. The payload shall consist of personnel, patients (computed at 150 pounds per occupant), and miscellaneous support equipment and devices appropriately distributed within the vehicle as designed.

3.5.3 Gross Vehicle Weight Rating (G.V.W.R.) The ambulance gross vehicle weight rating shall be in excess of the combination of weights of the vehicles curb weight and payload weight. Manufacturers shall provide a rating label showing the actual gross vehicle weight rating (G.V.W.R.) of the vehicle. (Not less than 9,000 lbs. for Type I and 8,200 lbs. for Type II.) (Maximum G.V.W.R. 11,000 pounds.)

3.5.4 Weight distribution. The curb weight (3.5.1) of the ambulance shall be equally distributed ± 5 percent over the right and left tire of the same axle when on a level surface. The weight distribution of the fully loaded ambulance on level surface shall be such that not less than 30 percent of the vehicles weight is on the front suspension, (see 4.3.1).

3.5.5 Ratings. Vehicle and component ratings shall be the manufacturer's published ratings, and shall not be raised to meet the requirements of this specification. When ratings are not published, the verification of the equipment manufacturer's rating shall be made available to the appropriate offices of the procuring activity.

3.5.6 Cab to axle (CA), type I vehicle. Cab to axle (CA) dimension for type I vehicle chassis shall permit a minimum of 58 percent of the outside body length forward of the rear axle centerline, plus 1 to 3 inches for cab to body clearance. Bodies designed with wheel openings shall have the rear wheels centered, ± 2 inches within the opening. (Minimum (CA) to be 84 inches.)

3.6 Chassis, power unit, and components.

3.6.1 Chassis-frame. The chassis-frame and components shall be sturdily constructed and shall be capable of withstanding the strains of on-off road service, any special service, and equipment requirements specified.

3.6.2 Vehicle lubrication. The chassis components, devices, accessories, and equipment requiring lubrication maintenance shall be fully equipped with lubrication fittings.

3.6.3 Power unit, engines.

3.6.3.1 Power unit. The power unit shall meet or exceed the required vehicle performance specified herein (see 3.4), at not more than the engine manufacturer's recommended operating engine speed. It shall be of such design and construction that it will give an even flow of power at all r.p.m. without undue vibration, strain, or overheating of engine parts. (Min. 390 C.I.D. Type I, 350 C.I.D. Type II)

3.6.3.2 Engine low temperature starting. Unless otherwise specified, engine shall start satisfactorily without aid of preheating devices at the minimum of -20 F.

Auxiliary heating and/or starting devices shall be provided to meet starting requirements at the option of ordering activity.

3.6.3.2.1 Power plant heaters, min. -30°F. startability. When specified (see 6.2), manufacturer's standard external or in-block power plant heater(s) shall be furnished for the engine coolant, oil pan or battery when necessary. The vehicle so supplied and furnished shall be capable of starting and operating normally, from -30°F. after standing 18 hours without benefit of solar heat.

3.6.3.3 Gasoline engine. Engine shall be a liquid-cooled eight cylinder internal combustion engine with a compression ratio, which permits efficient operation on either low lead (0.5 gram of lead per gallon, maximum) or unleaded regular gasoline. Engine horsepower and torque requirements shall be sufficient to comply with requirements of 3.4. Net horsepower ratings shall conform to SAE J245.

3.6.4 Power unit components.

3.6.4.1 Oil filter. The oil filter shall be the manufacturer's standard for the engine offered.

3.6.4.2 Air filter. The air filter shall be the manufacturer's standard for the engine offered.

3.6.4.3 Emission controls. Vehicles and engines shall comply with the regulations of the Environmental Protection Agency governing Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines in effect the year of manufacture. California and/or high altitude (3.15.3-17), pollution control requirements shall be provided when specified (see 6.2), California controls and test shall be provided those vehicles destined for operation in the State of California.

3.6.4.4 Fuel system. The fuel system shall conform to MCSR, Subpart E, 393.65 and 3.4.9 herein. Fuel tank capacity shall be not less than 20 gallons. If more than one tank is furnished, tanks shall be interconnected, and shall have a dash-mounted fuel gauge controlled by a selective switch, which will permit separate fuel level readings for each tank.

3.6.4.5 Cooling System. The heaviest-duty cooling system components, and capacity, offered by the chassis manufacturer shall be furnished, and a coolant recovery system shall be provided. The cooling system and related engine components shall meet the following test requirements:

a. With transmission in neutral or park, and full air conditioning load applied, the engine shall normally idle for 40 minutes in ambient temperatures of 95° F. and;

b. The vehicle burdened in accordance with 3.4.1, the ambulance shall travel not less than 5 miles at 30 m.p.h. ± 1 m.p.h. on a road of at least 7 percent (± 2 percent) grade to altitudes up to 8,000 feet. The cooling system shall maintain normal operation without any loss of coolant or overheating of the engine and related components.

3.6.4.5.1 Compensating and coolant recovery system. The vehicle shall be equipped with a closed, air-free, liquid-state coolant level indicating overflow recovery and compensating system. The system shall have a hermetical sealing pressure radiator cap, with a spring-loaded vent valve; a minimum 3 pints capacity, vented, unbreakable, translucent reservoir with connecting hose. (Coolant recovery system not required if not available from chassis manufacturer.)

3.6.4.5.2 Anti-freeze. All liquid cooling systems shall be protected with permanent-type anti-freeze to a minimum of -20°F., and shall be sufficient to prevent freezing at the lowest ambient temperature enroute to and at the vehicle destination. The cooling system shall be labeled to indicate degree of protection provided.

3.6.4.6 Exhaust system. The exhaust system shall conform to the Motor Carrier Safety Regulations. The system shall be designed to permit the engine to be idled while vehicle is standing with minimal exhaust fumes and contaminants entering the body interior. Each exhaust system shall be suspended using not less than 3 hangers, and conform to the sound level limits as specified in 3.4.3.

3.6.5 Drive train.

3.6.5.1 Drive train components. The drive train and components torque capacity shall meet or exceed the maximum torque developed in lowest gear ratio by the engine. Transmission and controls shall comply with FMVSS 101 and 102.

3.6.5.2 Automatic transmission. A continuous drive, automatic transmission shall be provided. Transmission shall provide not less than three-forward and one-reverse speed, and shall be equipped with the related heavy-duty components such as oil-cooler, control devices, and springs when option on model is offered.

3.6.5.5 Drive-line. The drive-line (shaft; U-joints, etc.) shall be balanced and supported to perform throughout the design speed range without whipping or vibrating. Modification resulting from lengthening the wheelbase shall be of chassis manufacturer's approved design.

3.6.5.6 Axle, ratings, ratios. Axle ratings shall be at least equal to the load imposed on each axle, measured at the ground, when vehicle is loaded as specified. When specified (see 6.2), that the vehicle is used in mountainous terrain, manufacturer's shall provide their accomodating higher axle ratio or equivalent engine-transmission, or axle combination.

3.6.5.7 Brake systems, service, and parking. Service brakes shall be power assisted, front disc-drum rear, split or dual hydraulically actuated brakes. Brake systems and components furnished shall comply with 3.4 requirements. Front drum brakes acceptable if disc not available from chassis manufacturer.

3.6.5.8 Special traction (rear end) differential. A positive traction, limited slip, or automatic locking type differential shall be furnished except on Type I vehicles equipped with dual rear wheels on extra wide axle housings.

3.6.5.10 Suspension. Vehicle shall be equipped with a matched set of springs, torsion, or air suspension system. Components shall have a rated capacity in excess of the load imposed on each member. Vehicle springs shall be chassis manufacturer's lowest clamped deflection rating for the model offered (for better riding quality). Suspension stabilizer devices shall be furnished when available and applicable to the model chassis furnished.

3.6.5.11 Spring stops. The manufacturer's standard spring bumpers and axle stops shall be furnished. The front stops and bumpers shall prevent the front axle from striking the engine or oil pan under all conditions of operation.

3.6.5.12 Shock absorbers. Shock absorbers, double-acting type, heaviest-duty available for model offered shall be furnished on the front and rear axle of all vehicles.

3.6.6 Steering. Steering system shall be the manufacturer's recommended power assisted design with a separate oil cooler if required for adequate cooling under

all operating conditions specified. Steering system shall achieve the turning diameter specified in 3.4.11.6.

3.6.7 Wheels. Unless otherwise specified (see 6.2) type I vehicles will be equipped with dual rear wheels. Type II shall be equipped with single wheels front and rear. Wheels shall conform to the recommendations of the Tire and Rim Association Inc., and shall be alike in type, size and load rating for all wheels on the vehicle including the spare.

3.6.8 Tires. Unless otherwise specified (see 6.2) tires shall be regular highway tread, of the largest size that can be placed on the vehicle without interference with the wheel housings, steering, and suspension systems (see 3.6.11). Tires furnished shall not be less than D load range requiring the minimum cold inflation air pressure to support the weight on each tire measured at the ground.

3.6.9 Inner Tubes. When tube type tires are furnished, inner tubes shall conform to ZZ-I-550 and be in accordance with the recommendations of the Tire and Rim Association, Inc.

3.6.10 Spare tire and storage. One inflated spare wheel/tire assembly shall be furnished. The spare shall be stored in a weather protected area that provides access without removal of patients from the compartment, or outside the ambulance easily available for quick replacement when needed. If in an exterior compartment, the closure panel shall be fitted with a suitable latch or lock; loose or removable panels shall not be acceptable. When in place, the spare assembly and tools shall have a quick action restraining device to eliminate noisy movement.

3.6.11 Tire chain clearance. Tire chain clearance for all driving wheels shall be provided in accordance with SAE J683a.

3.6.12 Wheel-tire balancing. Wheel/tire, hubs, and brake drum assemblies of the vehicle shall be in balance to the speed specified in 3.4.6.

3.6.13 Tools (tire changing). Vehicle shall be furnished with tools required for changing spare mounted tire/assembly, at any wheel with the tire flat. The tools shall be the minimum of a jack, jack handle and wheel nut wrench. The jack, without blocking, shall be capable of raising any wheel of the loaded ambulance to a height adequate to permit removal and replacement of the wheel/tire assembly. Tool storage shall be provided.

3.6.14 Hub caps. Manufacturer's standard hub cap or wheel cover shall be fitted on each grounded wheel (except dual wheels).

3.7 Electrical systems, and components.

3.7.1 Electrical systems. Ambulance shall be equipped with, but not limited to complete and operative 12-volt potential electric generating, starting, and lighting systems, specified electronic equipment and devices; including 110 volt A.C. power supply, and applicable accessory wiring systems. The electrical systems and equipment shall conform with FMVSS, applicable requirements of Motor Carrier Safety Regulations, Part 393 Subpart B and the recommendation of SAE, while complying with the sub-paragraphs herein. The electrical systems shall be reasonably accessible for checking and maintenance. All lamps, electronic devices (housed externally mounted fixtures) shall be chrome-plated, polished metal or other rust resistant materials, and weather proofed. Electrical fixtures attached to the sides of the ambulance below 75-inch height level shall be recessed, tunnel, or near flush mounted not to exceed 2 inches, except such items as spot lamp. Wiring installation shall include RFI traps, to minimize interferenc to biophysical monitoring equipment.

3.7.2 Wiring. All of the ambulance body electrical equipment shall be served by circuit(s) separate and distinct from the vehicle chassis circuit(s). Body wiring shall be stranded copper, thermoplactic harness type, permanenty color coded or numbered, grease, oil, and moisture resistant, routed in protected locations, neatly and securely fastened, and all apertures properly grommetted for passing wiring. Solderless insulated connectors shall be provided. The body electrical wiring shall incorporate overload protective devices of the automatic reset, circuit breaker type. In addition, one (1) space for single pole, 15-ampere circuit breaker shall be furnished for future use. The circuit breakers shall be readily available for inspection and service. Complete wiring diagrams (schematics) with identification codes for the standard and the optional equipment furnished shall be supplied with each ambulance, and may be included with manuals (3.20). Minimum size of the schematics shall be 8½ inches by 11 inches. Aluminum or copper coated aluminum wiring is not acceptable. Wiring shall exceed the load imposed for any given circuit.

3.7.3 Ignition system. Spark ignition engines shall be furnished with the manufacturer's current standard ignition system. To permit fording, the ignition system shall be moisture proof (3.4.10). The ignition switch shall comply with FMVSS 101, and 102, and be supplied with two keys.

3.7.4 Windshield wipers and washer. Vehicle shall be equipped with dual electric, multispeed (two or more), windshield wipers and washers complying with FMVSS 104.

3.7.5 Horn. Chassis manufacturer's standard electric horn shall be furnished.

3.7.6 Electric generating system (alternator). The generating system shall be capable of supplying the maximum built-in D.C. electrical current requirements of the ambulance, but not less than a 130 ampere rated capacity alternator.

3.7.7 Battery. A dual 12-volt potential battery system with an isolater device and/or a selector switch, located in driver's compartment allowing the electrical system to function from either one or both batteries simultaneously shall be furnished. The batteries provided shall be matched and have a minimum cold cranking performance rating of 350 amps @ 0° F. and with at least 100 min. reserve capacity @ 80°F. Battery ratings shall comply to table 1, of W-B-00131J or Battery Council International, Group 24 or 74. Batteries shall be located in a ventilated area sealed off from occupant compartments, easily accessible for checking and removal.

3.7.8 110 Volt AC electric power. An AC power inverter to provide the following:

a. Continuous 1000 watts (1200 watts maximum), single phase, constant 60 cycle 110 volt power output at all engine speeds to operate biomedical electronics and patient care equipment to be furnished, and;
b. Inverter wiring harness shall terminate with quick-disconnect or terminal strip couplings at the inverter to facilitate removal and service of the unit without removal of the harness.
c. On-off switch with lighted indicator and/or ammeter located at a 110 volt receptacle in patient compartment on patient compartment switch panel (3.8.7.2) shall be provided.

3.7.9 Electrical 110 volt receptacles. The patient compartment shall be furnished with two 3-wire grounded duplex receptacles. Receptacles shall be located at the upper or lower torso area of the primary and secondary patients, for the use of electric powered medical devices.

3.7.10 Electronic and radio interference suppression. The ambulance (the final stage manufacturer) shall have sufficient electromagnetic radiation suppression to prevent emitting interference to any specified electronic, biophysical monitoring, and radio(s) equipment furnished.

3.8 Lighting, ambulance exterior and interior.

3.8.1 Ambulance exterior lighting. The basic exterior vehicle lighting shall include: headlights, parking lights; directional signal lights, tail and stoplight; sidemarker lights; license plate lamp; back-up lights; hazard warning lights; clearance lamps, when applicable; emergency beacon light and corner warning lights 3.8.2; flood lights 3.8.3; and spot light 3.8.4.

3.8.2 Warning lights. A roofmounted 360° rotating dome beacon lamp containing four sealed beam bulbs, each having a minimum 35,000 candle power, with alternating lens colors, two white and two red, shall be provided and located near the center of vehicle or body. The upper right and left side body shall also be provided with two alternate flashing pattern red color lights. Corner warning lights dome or tunnel, (two on the front facing front and two on the rear facing rear), shall be red seal beam type having a minimum of 300 candle power output each. In addition, at least two red flashing warning lights, shall be located in, on, adjacent to, or behind the vehicle's front grill. Warning lights shall comply with SAE J845 and J595b. Warning light mountings shall be provided with reinforcements at point of attachment to vehicle. Warning lamps shall not be obstructed by opened doors. NOTE: THE ABOVE SPECIFICATION IS STANDARD - - ANY ADDITIONAL WARNING LIGHT OPTIONS MUST BE APPROVED BY THE DIVISION OF EMERGENCY MEDICAL SERVICES & HIGHWAY SAFETY, ILLINOIS DEPARTMENT OF PUBLIC HEALTH. Strobe lights are not acceptable. Maximum output of any bulb shall not exceed 75,000 candlepower. Clear lenses on 888 pattern lights are prohibited.

3.8.3 Flood and loading lights (exterior). "Sealed flood lightings units shall be located at the rear, left and right sides of the ambulance. Flood lights shall be integrally mounted below the roof line, but not less that 75 inches above the ground and unobstructed by open doors. Flood light(s) shall have a minimum of 800 candle power output per side, and conform with SAE J598a. Flood lighting at the rear shall be arranged to illuminate the ground area immediately surrounding the loading doors." The switches shall be shielded and control each side separately. (3.8.7.1)

3.8.4 Spotlight. Two 360° swivel, clear spot lamps of not less than 75,000 candle power (200,000 cp bulbs may be substituted), pillar or cowl type, convenient for the driver and assistants use must be furnished.

3.8.5 Ambulance interior lighting. The basic interior ambulance lighting shall include: driver compartment dome light; instrument panel lights and indicators; master switch panel or console lights; other warning lights; Door-Open indicator; and glove box light, when applicable. The patient compartment shall include: overhead or dome lighting 3.8.6; type I vehicle, step-well light(s), and switch panel lighting; 3.8.7. Lighting shall be designed and located so that no glare is reflected from surrounding areas to the driver's eyes or his line of vision, from instrument and switch control panels or other areas that are illuminated while the vehicle is in motion.

3.8.6 Patient compartment illumination. Normal white illumination in all patient areas shall be not less than 15 foot candle intensity measured all along the center line of the clear floor with doors open and all ambient light oblitereated. Patient compartment lighting shall also be capable in combination, or by separate means to provide at least 40 foot candle intensity, when measured at any point on top of the cots. A reduced lighting level controlled by the technician shall also be provided by switch(s), electronically, or with a fire-proofed rheostat to control compartment lighting, or by a second system of low intensity lights. Blue light(s) or lens shall not be used in the patient compartment. The patient compartment (normal) light(s) and step-well lights shall be automatically activated when opening the entrance doors, otherwise controlled by driver's master switch. Fixtures (interior) shall be near flush mounted protruding not more than a nominal 1.5 inches.

3.8.7 Switches and control devices. Instrument panel, switches and control devices shall be located for left-hand drive vehicle. All switches and control devices shall be clearly visible for the ambulance personnel; identified plainly, and permanently marked; grouped according to function; mounted in lighted panels, or consoles and installed in a manner to facilitate removal and serving. All controls shall comply with FMVSS 101a.

3.8.7.1 Driver compartment switches. The following switches and controls shall be located within the normal reach of the driver without excessive movement of his head or eyes from his driving field-of-view. These shall include and control:

All exterior lights
Communication (2-way radio, intercom, public-address)
Environmental equipment (cab and patient compartment master switch)
Siren (master control, foot control or push-button)
Driving instruments and vehicle operating controls
Interior lights (switch panel, instruments, etc.)
Emergency master switch (optional)
Throttle (manual hand operated)
Dual Battery Selector Switch

3.8.7.2 Patient's compartment switches. The following switches and controls shall be furnished when applicable and be easily accessible to the technician when seated at the patient's head. The forward panel shall control:

Interior lights (on-off, panel light, etc.)
Heating
Ventilation
Air Conditioning (patient's compartment only)
Communication (2-way radio microphone, intercom)
A.C. 110 volt power supplies (on-off switch)

3.9 Cab-body driver compartment and equipment.

3.9.1 Driver's compartment, cab-body structure. All cab compartments shall be of sufficient size to accommodate two 5 percentile to 95 percentile males (driver and assistant) with space to perform driving and control activities. The cab (type I) or the cab-body (type II) shall be organized and designed with the specified and required equipment and accessories for ease of operation and safety. The cab and cab-body shall comply with Federal Motor Vehicle Safety Standards 101, 102, 103, 104, 107, 108, 111, 113, 205, 206, 207, 208, 209, 210, 211, and 302. Type II vehicle of the integral cab-body design shall essentially be equipped with front doors and window openings equal to the type I conventional truck cab, and conform to 3.9.2 thru 3.9.4. All ambulance types shall be provided with a bulkhead or partition between the cab or driver's compartment and the patient's compartment (see 3.10.15).

3.9.2 Cab-body provisions. Cab-body section shall provide a right and left side weatherproofed forward hinged door, with crank operated side windows and crank or push open vent windows; door stops; external key operated door locks, with two sets of keys; standard cab compartment insulation and sound deadening; trim panels or closed panels, and headliner; floor covering; panel mounted instruments; seat(s); painted interior exposed surfaces; hardware and other exterior exposed metal trim chrome plated, stainless steel or anodized aluminum; and furnished with at least the following equipment:

(a) Dual sunvisors (padded).
(b) Armrests, mounted on each side door if available.
(c) Compartment ventilation, other than windows.
(d) Key-operated ignition switch.

(e) Ammeter and/or voltmeter.
(f) Fuel gauge(s).
(g) Oil pressure gauge.
(h) Engine temperature gauge.
(i) Speedometer with odometer. (May be combined with in-dash Tachograph.)
(j) Environmental controls (heater-defroster/air conditioner, etc.).
(k) Seat belts; and driver's shoulder harness.
(l) Dual outside mirrors (3.9.5).
(m) Cab lighting and controls.
(n) Tinted windshield.

3.9.3 Cab compartment driver and assistant seat. The driver's compartment shall be furnished with two individual bucket-type seats (driver and assistant). The seats shall be frame constructed with cushioned springs or foam rubber, padded, and upholstered to provide maximum riding comfort. The seats shall be covered with fire-retardant, washable, artificial leather or plastic, nonabsorbent material. Driver's seat shall be adjustable a minimum of four inches forward or backward.

3.9.4 Controls and operating mechanism. All controls and operating mechanism shall be located for left-hand drive. Lever controls and equipment, items and devices shall be installed, located, and stowed for the convenience of the purpose intended, shall not interfere with the ambulance personnel or patients ingress or egress of respective compartments.

3.9.5 Outside rear view mirrors. Dual below eye level type outside rear view mirrors with a minimum of three supporting arms, and fully adjustable mirror head, each with not less than 70 square inches of reflective glass area shall be furnished. Mirrors shall include a combination or separate wide angle mirror system mounted on the lower portion of each mirror. Hardware and mirror heads shall be of polished metal. Western style mirrors not acceptable.

3.9.6 Bumpers and steps. A sturdy front and rear, full-width vehicular or body bumper(s) secured to the vehicle's chassis-frame shall be provided. Step shall be provided at back door opening of the patient compartment if the floor is more than 18 inches above the ground. If step is required, the height from the ground to the first step shall be equal distance $\pm$ 2 inches from the ground to the floor of the patient compartment. The step shall be designed to prevent the accumulation of mud, ice, or snow, and have a non-skid surface with a minimum depth of 5 inches (tread). Step may be the open grating type, provided it is not located or exposed to the interior of the ambulance when the door(s) is closed. All necessary steps shall be at least the width of the door opening for which they are provided.

3.9.7 Fenders. Fenders or inner weather shields shall be provided over all wheels and tires.

3.9.8. Engine hood. Engine hood and cowl shall be fitted to prevent leakage from precipitation, heat, smells, and noise from entering the interior of the cab and body. Cab compartment hood, type II ambulance shall open sufficiently for easy access to engine components requiring routine maintenance.

3.9.9. Cab connecting bellows, for type I vehicle. A flexible, weathertight bellows of rubberized nylon construction shall be provided between the cab body and the containerized modular body. Window in the cab body shall be of the sliding type within attached bellows aligning and connecting with the modular body window opening, and shall generally conform to requirements of the partition (see 3.10.15).

3.10 Ambulance body or patient area.

3.10.1 Body accommodations. The ambulance body proper or patient compartment or area shall be sufficient in size to transport occupants as specified in plan A or B (see 3.1.5) and accommodate and store all the stretchers, cots, and litters through the range of dimensions as specified in table I. There shall be space around the patients to permit a technician to administer life supporting treatment to at least one patient during transit (see dimensional parameters 3.10.4).

Table I. Ambulance Stretchers, Cots, and Litters

Stretchers, Cots, and Litters	Dimensions (In Inches) Length Minimum	Width Minimum	Bed Height Maximums
Style 1 -- Wheeled Cot (Elevating)	75	22 1/2	15[1]
Style 2 -- Wheeled Cot-Bench (Non-Elevating)	75	21 1/2	19[1]
Style 3 -- Folding Stretcher or Combination Stretcher Chair	73 1/2	19	8 1/4
Style 4 -- Navy Stokes Litter (Resting on Floor)	84 3/4	23 1/2	7 1/2
Style 5 -- Standard Army and NATO Litters (With Poles)[2]	90(-0,1/4)	23(-6/10,-3/4)	6 3/4(-0)

Notes: [1] Measured to top of positioned 3 inch thick mattress.

[2] Dimensions of Army and NATO litters are in accordance with North Atlantic Treaty Organization Standardization agreement STANAG No. 2040.

3.10.2 Deleted.

3.10.3 Technician Seating. The technician shall be provided with space and a seat equipped with safety belt and backrest, not less than 18 inches deep by 18 inches wide and 12 to 18 inches high (par. 3.11.1.1). Technician shall be seated at the head of the primary patient at the bulkhead or partition behind cab compartment, (see 3.1.5 and 3.11.4). Space under the seat may be designed as storage compartment, unless utilized for other equipment such as heater or vents, etc.

3.10.4 Patient compartment interior dimensional parameters. The patient's compartment shall provide, but is not limited to, a minimum of 280 cubic feet of space, less 10 percent deviation for cabinets, while complying with the following:

Length: Measured from the partition to the inside edge of the rear loading doors at the floor, shall be at least 116 inches in length. This length in the compartment shall provide at least 25 inches and not more than 30 inches of unobstructed space at the head of the primary patient, measured from the technician's seat back-rest to the forward edge of the style 1 cot.

Width: The width of the compartment after cabinet and cot installation, shall provide at least 15½ inches in type I and 12 inches in type II ambulance of clear walkway between cot(s) and the squad bench, and at least 25 inches (width) of kneeling space (for the technician) along side the primary cot, measured at the floor for a height of 9 inches, from the forward leading edge (corner) one-third the length back of the (primary) wheeled elevating cot.

Height: Minimum 60 inches. The patient compartment shall provide at least 60 inches height over the patient area, measured from floor to ceiling exclusive of cabinets or equipment, and symmetrical corners and edges.

3.10.5 Body, general construction. The body, type I modular unit, and the type II integral cab-body shall be of prime commercial quality metal or other material with strength at least equivalent to all-steel. Wood shall not be used for structural framing. The exterior of the body shall be finished smooth with symmetrically rounded corners and edges except for rub rails, presenting a modern and aerodynamic appearance, and shall embody provisions for doors and windows specified herein. Ambulance body (prior to outside attached devices) as a unit shall be designed and built to provide impact and penetration resistance, and shall be of sufficient strength to support the entire weight of the fully loaded vehicle on its top or side if overturned, without crushing, separation of joints, or permanently deforming roof bow or reinforcements, body post, doors, strainers, stringers, floor, inner linings, outer panels, rub rails, and other reinforcements. As evidence that ambulance body meets the above criteria, the body manufacturers, (fabricated, modified, or conversions), excluding the conventional cab shall furnish for each body model (type) physical test data certifying that the ambulance body meets Static Load Test code for School Bus Body Structure, Standard 002.

3.10.6 Ambulance body structure. All parts of the ambulance body, where applicable shall be fastened together with rust-resistant fasteners in a manner which will preclude loosening of bolts, screws, and rivets, and cracking of welded joints. Metal tapping plates welded to the walls or ceiling structure to provide firm securing for installed equipment (cabinets, benches, partition, cylinders) shall be employed in the ambulance structure. Self-tapping screws shall not be used where subjected to stress. The body roof, and panel joints shall be watertight. All openings between chassis and occupant carrying compartments due to alternation or construction shall be sealed, including bulkhead space between cab and body, type I (see 3.9.9).

3.10.7 Body mounting. Heavy rubber or antisqueak material shall be utilized between body frame and attaching chassis. Reinforcements or filler blocks shall be used where mounting devices might otherwise deform frame flanges. Mounting devices shall be locked units which will minimize loosening, but which may be tightened if necessary. Type I ambulance body shall have at least 4 high-strength 5/8-inch bolts to attach the body brackets to the frame chassis on each side, mounted so as to prevent any side movement of the body. The ambulance body of type I vehicle shall not be welded to the frame at any point, and shall be interchangeable with other vehicle chassis of the same manufacturer having the same cab to axle (CA) dimension.

3.10.8 Doors. Two door openings, other than the doors for the driver cab compartment shall be provided. There shall be a door(s) opening on the right forward side and a one or two door loading opening, at the rear of the patient compartment. A forward hinged single door, double doors or a sliding type door shall provide a minimum right side-door opening of 30 inches wide, and 54 inches high for type I and 42 inches high for type II. Rear loading door(s) shall cover a clear opening of not less than 46 inches in height and 50 inches in width for type I, and the manufacturer's standard for type II. Both doors shall be hinged at the outer edges and open back towards the side of the vehicle. The ambulance body doors shall be equipped with

not less than 250 square inches of safety glass area per door. Rear door windows shall be stationary. Doors shall be designed for easy release, but prevent accidental opening with an inter-locking system that functions even when doors are not completely closed. A "Door-Open" warning device shall signal (indicator or buzzer) when doors are not closed. Each door shall have effective compression or overlapping seals to exclude dust, water, and air. Doors may contain and be equipped with recessed compartments as applicable to the interior for storage of supplies and devices.

3.10.9 Door latches, hinges, and hardward. Door latches, hinges, and hardware shall comply with FMVSS 206. When doors are open, the hinges, latches, and door-checks shall not protrude into the access area. All doors shall have hardware or devices to prevent inadvertent closing; a grab handle on the inside of each door, in addition to a door operating handle; door stops to prevent damage to body sides; a handle with latches operable from inside and outside of the body with one external operated lock with key per door opening. Hardware and other exposed interior trim shall be chrome plated, stainless steel, or anodized aluminum. All hangers or supports for equipment or other items shall be mounted as flush as possible with the surrounding surface when not in use.

3.10.10 Floor. Floor shall be at the lowest level permitted by clearances, but not more than 33 inches from the ground. It shall be flat and unencumbered in the access and work area. Floor shall withstand a distributed load of 150 pounds per square foot. Metal floor shall be reinforced to eliminate "bil canning" and insulated against outside heat and cold. The floor of the patient's compartment shall be either (1) of sheet metal; minimum 20 guage, and reinforced with ½-inch thick five-ply water-resistant plywood; or (2) marine grade plywood not less than 3/4-inch thick, both supported by body framework. There shall be a minimum of voids or pockets at the floor to side wall areas, where water or moisture can become trapped to cause rusting and unsanitary conditions. Voids and pockets shall be filled with sealer or caulking compound. Flooring shall extend the full length and width of the compartment or body (including space under the cabinets).

3.10.11 Floor coverings and color. Floor covering shall be provided that harmonizes with the interior of the patient's compartment. The floor covering shall be seamless one piece; no-wax, skid resistant vinyl not less than 1/16-inch in thickness; permanently applied, and shall extend the full length and width of the compartment. Covering joints at side walls, where side panels and covering meet shall be sealed and bordered with rustproof, corrosion-resistant metal cove moulding.

3.10.12 Stepwell (side door). Steps shall be provided at door opening if the floor is more than 18 inches above the ground. Stepwell, when applicable, shall be the enclosed two-step type. Height of bottom step shall not exceed 18 inches in type I vehicle, and 22 inches in type II. Stepwell of type I body shall be lighted (see 3.8.5 interior lights), and all step surfaces shall be covered or taped with anti-slip material.

3.10.13 Wheelhousings. Wheelhousings of type I vehicle shall include splash shields under the body. The splash shields shall extend around the top of the wheel and to the bottom of the body and side skirting. Wheelhouse opening shall allow for easy tire removal and service. Chassis manufacturer's standard wheelhousing will be acceptable for type II. No electrical wiring or components or heating-air conditioning lines shall be routed through wheel-wash areas.

3.10.14 Windows. The patient's compartment shall not have windows except the viewing panel in the partition or forward bulkhead (3.10.15) and in the doors (3.10.8). Glazing shall comply to FMVSS 205.

3.10.15 Partition. A load bearing bulkhead or partition in all ambulance types shall be placed between the driver and patient's compartment. Type II vehicle shall have the partition located in back of the driver's seat rear-most position. The partition shall incorporate a shatterproof viewing window of at least 100 swuare inches for visual check of conditions in the patient's compartment by the driver. Viewing window shall be treated or located in the partition or bulkhead to prevent the lighted domelights in the patient's compratment from interferring with the driver's night vision and visability. There shall be a means of voice communication between the driver and the technician by way of opening the partition viewing window(s), and by an intercom system (3.14.5). Partition and storage compartment shall be constructed and secured in sides, ceiling, and floor by metal channels or angles that are bolted or welded to the tapping plates, located behind side walls and ceiling panels. Partition shall be firmly secured to withstand shock and have roll-bar characteristics. Walk-through partition optional in Type II. When option selected.

3.10.15 Insulation. The entire body; sides, ends, roof, floor, and patient's compartment doors shall be sufficiently insulated to enhance the environmental criteria specified (3.4.2 and 3.13), and minimize conduction of heat, cold, or external noise entering the vehicle interior. The insulation shall be vermin and mildew-proof, fire-retardant, non-hygroscopic and a non-settling type. Undercoated floors and doors will be considered to have sufficient insulation for the floor and door area.

3.10.17 Interior Surfaces. Interior of the body and the exterior of the storage cabinets shall be free of all unnecessary projections. Exposed edges and corners shall be broken with a radius or chamfer, beaded, hemmed, or flanged or otherwise treated to minimize sharp edges and corners. The finish of the entire patient's compartment, including stowage cabinets, and equipment shall be impervious to soap and water, disinfectants, mildew, and shall be fire-resistant. Interior body lining and cabinetry, excluding the cab compartment (See 3.9), shall be of high strength metal panels, reinforced glass fiber, vinyl coated wood, plywood or aluminum, plastic panels, plastic impregnated panels or polyester sheets of equivalent strength. Ceiling headlining may be of vinyl upholstery material.

3.11 Patient compartment facilitiations.

3.11.1 Interior stowage accomodations. The interior of the patient compartment shall provide, but shall not be limited to, a minimum volume of 30 cubic feet of enclosed stowage cabinetry, compartment space, and shelf space which shall be conveniently located for medical supplies, devices, and installed systems as applicable for the service intended (reference to U.S. Department of Transportation's, (DOT) report; Ambulance Design Criteria.) Enclosed compartments and spaces shall be located at, in, or on the partition, side walls, overhead, squad bench, technician seat and doors. Compartment(s) under floor with opening panel(s) inside patient compartment shall not be acceptable.

Whether specified herein or not, stowage shall be required for the following items:

Item	Approximate Area in Cubic Feet
Medicine dispensary cabinet (s)	5
Medical supplies cabinet	8
Linen Supplies	4
Oxygen installation (main) (See 3.12)	6
Oxygen unit (portable)	1
Telemetry equipment	2
Radio equipment & Antenna	1
Storage, Misc.	2

Vacuum aspirator unit	1
Air conditioning unit	as required
Heating system	as required
Backboards (long and short)	as required
Stretchers storage (folding and scoop)	as required
Switch panels & controls	as required

3.11.1.1 Location of equipment and supplies. Shall be dictated by the relative importance of ready accessibility to the technicians, with priority given to items necessary to cope with life-threatening conditions at the scene and in transit. The equipment and supplies necessary for airway care, artificial ventilation, oxygenation, and suction shall be within reach of the technician at the head of the primary litter, and when furnished, those for cardiac resuscitation, control of external hemorrhage, administration of intravenous agents, and the monitoring of blood pressure shall be readily available to the technician at the side of the litter.

3.11.2 Emergency access equipment and stowage accommodations. An interior or preferably an exterior compartment shall provide convenient, weather-proof storage space as applicable to the vehicle. Exterior compartment door(s) shall have suitable rust-resistant flush type latch and key lock. Space for the following items shall be provided in the stowage compartment when specified in 3.15.3 and 3.15.3.1.

Item	Approximate area in cubic feet
One small tool box for hand tools	10
One wrench, 12" adjustable, open-end	
One screw driver, 12" regular blade	
One screw driver, 12" Phillips type	
One hacksaw with 12 wire (carbide) blades	
One pliers, 10" vice grip	
One hammer, 5# 15" handle	
One pry axe, extendable handle	
One wrecking bar, 24" combination tool	
One bolt cutter, 36", jaw opening of 9/16"	
Two portable hydraulic power jacks with spreader tool hand-powered, maximum 4-ton capacity	
One shovel, pointed blade (folding type) (i.e. Military 'E' tool)	
One double-action tin snip, minimum 8"	
Two ropes, manilla, 50' x 3/4" diameter each (or nylon, 50' x ½" diameter)	
Two pairs gloves, leather	
Two pairs goggles for eye safety	

3.11.3 Stowage compartments and cabinets design. Storage cabinets, drawers and kits shall be easily opened, but shall not come open in transit. For rapid identification of contents, medical supply cabinets above the litter patients shall have shatter-proof transparent sliding door(s). Stowage compartments shall be divided into sections, shelves shall be adjustable, pullout or sliding type, and drawers removable. Cabinet compartment, drawers, and doors (sliding or hinged) shall be automatic latching fitted with positive latching devices. Oxygen cylinder (3.12.1) shall be within a vented crashworthy compartment, mounted with a minimum of 3 restraining devices. Cabinet shelves shall not be less than 10 inches in depth below vehicles belt level. Stowage compartment, cabinets and equipment support area shall be finished in accordance with 3.10.17. Cabinets shall be firmly anchored to tapping plates of the body structure (3.10.6). Tops of the cabinets shall be bordered or surrounded by a lip of not less than 1/2-inch in height, and cabinet shelves of not less than 1/4-inch height.

3.11.4 Squad bench, seats and backrests. The squad bench (required for floor plan A) shall support the style 3 folding/chair stretcher specified (see 3.10.1 and 3.11.5). Squad bench platform shall be not less than 22 inches wide, 72 inches long and 18 to 22 inches high providing at least 18 inches wide padded seat(s), stretcher post cups for legs and wheel cups to hold the specified style 3 stretcher(s), and underneath storage. All seats in the patient compartment shall have padded backrests. Padding furnished shall be foam rubber or polyether urethane foam of not less than 2.5 inches thick or more than 3.5 inches thick, and covered with fire-retardant, washable, non-absorbent artificial leather or vinyl. Backrests shall be padded with foam not less than 1 inch thick, and covered with identical material as used on the seats. Squad bench or cot shall be furnished with 3 sets of safety belts, which may double as cot restraints, (see 3.11.6).

3.11.5 Stretchers, cots and litters. Ambulance shall be provided with one style 1 cot for the primary patient, and a combination stretcher chair (style 3) designed to carry a patient over stairways and other narrow areas (see 3.11.5.1). Stretchers, cots and litters shall conform to the dimensions of table I (3.10.1) length and width measurements shall be taken at the metal framing excluding joint fittings. Wheeled cots shall include: foot and head pulls; minimum 3-inch thick polyether mattress with vinyl coated nylon fabric (mattress filler and cover materials shall conform to MVSS 302) with cover for style 1.

3.11.5.1 Combination stretcher chair. As specified in 3.15.4, a Ferno Washington Model 107c Combination Stretcher Chair or equivalent shall be furnished. Stretcher shall conform to the dimensions of style 3, of table I (3.10.1). Stretcher shall have fixed posts and wheels, with wheel chair, stair chair and stretcher capabilities.

3.11.6 Seat safety belts and anchorages. All seats shall comply with FMVSS 207. Safety belts and anchorages shall comply with FMVSS 208, 209, and 210. Seat belts shall have retractor devices in all seat positons in the vehicle, including squad bench.

3.11.7 Litter fasteners. Crash-stable fasteners of the quick release, adjustable type shall secure the specified litters to the floor or side walls. Where a single patient may be centered in the area on the wheeled litter, additional attachments (cups and locks) shall be provided.

3.11.8 Patient Restraint. At least three strap type restraining devices (chest, hip, and knee) shall be provided per stretcher, cot and litter to prevent longitudinal or transverse dislodgement of the patient during transit. Restraiing straps shall be not less than 2 inches wide, nylon, easily removable for cleaning, two piece assembly with quick release buckles.

3.11.9 IV holders and hooks for intravenous fluid containers. A rigid telescoping IV pole and holder, with a 52 inch minimum height when extended shall be provided the style 1 cot. Two near flush type IV ceiling holders or hooks shall be provided. These shall be located at the side and heads of the primary patient's cot and one at the secondary patient's cot or squad bench.

3.12. Oxygen and suction systems and equipment.

3.12.1 Oxygen; main supply and installation. The ambulance shall have a hospital type piped oxygen system, capable of storing and supplying a minimum of 3,000 liters (see cylinder data 6.8) of medical oxygen. This main oxygen (O_2) supply may be provided from a single tank. Cylinder(s) shall conform to Federal Specification RR-C-901, DOT specification 3AA2015, and MS-39226-8. The oxygen cylinder(s)shall be located in an exterior vented (using one way check valve type device) storage compartment (see 3.11.3) accessible for replacement preferably from outside the patients compartment working space. Mounting and restraints for oxygen cylinder(s) shall be crash-worthy. The cylinder controls shall be accessible from inside the vehicle. The pressure gauge and regulator shall be visible by way of see-thru-door from the technician's seat, and from the site where the cylinder(s) change is accomplished. The ambulance consignee will install the oxygen cylinder(s) at the time the vehicle is placed in service. Cylinder changing wrench(es) shall be furnished chained within the oxygen cylinder compartment. The contractor shall install all other components and accessories required for the piped oxygen system which shall include, but not be limited to: at the cylinder(s), a reducing valve, pressure regulator having at least a 0-2,000 PSI range (4000 PSI test) and be preset to 50 PSI line pressure, (visible to the technician): non-ferrous piping and low pressure hose suitable for medical oxygen. Oxygen piping shall be concealed, and not exposed to the elements or damage, securely supported, and readily accessible for inspection and replacement. Oxygen shall be piped to valves of two outlets, one duplex oxygen outlet station for the primary patient, and one oxygen outlet for the secondary patient; at least one oxygen wall outlet for the primary patient shall be equipped with a plug-in flow-meter, humidifier, and delivery tube, the second oxygen wall outlet will be used for quick disconnect plug-in devices not requiring humidification. Outlets shall be adequately marked and identified, and not interfere with the suction outlet. The entire system shall be tested (see 4.4.5).

3.12.2 See Medical Equipment (3.15.4).

3.12.2.1 See Medical Equipment (3.15.4).

3.12.3 Suction aspirator system. An engine vacuum operated or electrically powered suction aspirator system shall be provided for the primary patient. The installed suction system shall be powerful enough to provide an air flow of at least 30 liters per minute (1.06 cubic feet per minute) at the end of the delivery tube, and a vacuum of at least 300 Millimeters (11.811 inches) of mercury to be reached within 4 seconds after the tube is clamped. The suction line shall be securely fastened, to prevent damaging, but accessible for inspection and repair. It shall be connected to a valve; and a reservoir chamber having a volume of not less than 300 cubic inches, in line between the vacuum source and a single, plug-in, self-sealing valve connection. A plug-in outlet shall be located near the oxygen outlets, but far enough away to permit easy handling of suction and nonbreakable humidifier bottles. Unless otherwise specified, suction system shall include the following: two mating outlet fittings or yokes for the valve connection; one 10-foot medical vacuum hose; suction control valve regulator, vacuum gauge, which shall be connected to a nonbreakable, transparent, suction trap bottle of one liter (1.057 quarts) capacity, and located in the side cabinet next to the primary patient and technician; one spare nonbreakable suction bottle stored nearby, when disposal bag is not used; one semi-rigid pharyngeal suction tip (nonmetallic), one suction rinsing water bottle; pharyngeal tubes (air ways adult, child, infant); spare sterile suction tip and catheters; one Y connector for tracheal suctioning; and all other devices or accessories specified or required for a ready-to-use aspirator system. Reservoir chamber must be easily accessable for inspection and repair.

3.12.4 Portable suction aspirator. (See medical equipment 3.15.4)

3.13 Environmental climatic equipment.

3.13.1 Environmental systems. All ambulances shall be equipped with a complete climate environmental system(s), to supply and maintain clean air conditions and comfortable level of inside temperature in both driver and patient compartments. The various systems for heating, ventilating, and air conditioning may be separate or combination systems, which shall permit control of environment within each compartment. The air systems shall be of high volume capacity with low velocity delivery for minimum draft circulation while providing a positive pressure within each closed compartment when the vehicle is in service. Environmental system components shall be readily accessible for service at the installed locations.

3.13.2 Driver's compartment environmental equipment. The driver's compartment shall be furnished with a hot water, fresh-air, high capacity, heaviest-duty (OEM) heater, with dual defrosters, and dehumidifying air conditioner system. Systems shall provide outside air and variable mixtures as desired, circulating conditioned air through the compartment, in compliance with the environmental criteria specified herein.

3.13.3 Patient compartment environmental equipment. The patient compartment shall have heating equipment, ventilation provisions, and air conditioning equipment complying with the environmental criteria specified herein. Unless the reheat-recycle type conditioning system is furnished, the heating system shall be a high-capacity hot water type heater.

3.13.4 Heating criteria. When measured midway between the floor and the ceiling the heating system(s) shall have sufficient capacity to heat the driver and patient compartments to a minimum dry bulb temperature of 75°F., within 30 minutes time at 1200 to 1500 RPM engine speed in neutral gear, after a cold soak in an ambient temperature of 0°F. Temperature gradient between the floor and ceiling shall not exceed 10°F., with partition openings closed. Heater(s) furnished shall comply with Motor Carrier Safety Regulations 393.77. Heater air outlets shall be located to provide a comfortably heated compartment.

3.13.5 Air conditioning criteria. When measured midway between the floor and the ceiling, the air conditioning system(s) shall have sufficient capacity to lower the temperature in the driver and patient compartments to 75°F., within 30 minutes time at 1200 to 1500 RPM engine speed in neutral gear, and maintain that temperature while operating the vehicle in an ambient temperature of 95°F. In addition, the cooling capacity of the air conditioning system shall be sufficient to maintain a minimum of 15°F., ambient air temperature differential (outside/inside temperature) under all other operating conditions (see 3.4.2). The main components compressor, condenser(s), evaporator(s) and clutch(s) shall have a balanced system and be in accordance with established practices and standards of International Mobile Air Conditioning Association, Inc. (IMACA).

3.13.6 Ventilation criteria. Ventilation system(s) of the driver and patient compartments shall provide a complete change of air within each compartment every two minutes. Ventilation shall be separately controlled within each compartment. Fresh air intakes shall be located in the most practical contaminant-free air space on the vehicle. Compartments shall be ventilated by the air delivery system of the environmental equipment (heater-air conditioner) or by separate system(s); such as power intake, exhaust ventilator(s), and static roof vent(s).

3.13.7 Environmental controls. Adjustable, manual, or thermostatically operative controls shall permit heating and/or air conditioning and ventilating in either compartment, without affecting the other compartment or simultaneously heating one compartment and air conditioning the other. Switches and controls shall be located in panels and be readily available and identified for function and operating position (see 3.8.7 thru 3.8.7.2). Switches and control components shall exceed in capacity the amperage and resistance requirements of the motors. Blower or fan motors shall be at least three speed design. Shut-off valves for the heating (hot water) system(s) of the patient compartment (feed & return hoses) shall be provided and shall permit the use of the balance of the unaffected system(s). Air systems shall have adjustable louvers to direct the flow of air.

3.14 Communications.

3.14.1 Communication equipment. All ambulances shall be equipped with a 12-volt DC two-way (mobile) radio, intercom, public address, and electronic siren. Switches and controls shall be panel mounted with switch positions identified.

3.14.2 Two-way MERCI VHF mobile radio. All ambulances shall be provided with sufficient space for the radio, convenience features (antenna openings, wiring, panels, etc.) that are required for the installation and servicing of such radios. MERCI VHF mobile radios are four-channel, multitone CTCSS encode (six tones minimum) with four-channel receive scan. The last and second last tone encodes are to be 210.7 Hz (Hospital ALL CALL) and 225.7 Hz (State Police). The frequencies for the four channels are as shown below:

Channel	Frequencies (MHz)	
1	155.340 T & R	Amb. to Hosp.
2	155.340 T & 155.460 R	Amb. to State Police
3	Reserved	(see MERCI manual)
4	155.220 T & R	Amb. to CMED

3.14.3 Antenna, cable and mountings. The supplier shall provide an access plate and opening, and coaxial lead-in wire from the ventilated radio storage compartment to the antenna port. All ambulances shall be provided, by radio vendor with a mounted 50 ohm VHF antenna (unity to 3 dB gain) tuned to 155.340MHz. This antenna shall be capable of RF power inputs up to 110 watts with a VSWR less than 1.5:1. The antenna installation shall include a suitable ground plane and a coaxial RF lead-in cable (RG58U-A) from the antenna to the ventilated radio transceiver compartment. Lead-in coaxial cable shall have a transceiver output connector as specified by purchase order; where none is specified, a standard UHF connector shall be used. Do to the need for long range communications, antennas should be installed near the center of the vehicle roof away from obstructions. A rugged low silhouette vehicular antenna is recommended. Vehicle shall be provided with easy maintenance access to antenna connector and coax cable.

3.14.4 Two-way (mobile) radio equipment. Radios must be provided by consignee.

3.14.5 Intercom system. An inter-communication facility shall be provided between the driver and patient compartments. The intercom shall be solid-state, independent of the two-way (mobile) radio equipment; have speaker/microphone unit in the patient compartment in stand-by "talk" mode; located near technician's seat, and any necessary talk/listen switching controlled by the driver. (Due to the lack of quality in mobile intercom systems, this is an option. Silent intercom systems are acceptable in lieu of voice type).

3.14.6 Siren - public address system. The combined electronic siren (with warning light(s) permitted) and public address system furnished shall include upgrading features; radio amplification capability, complete with speaker(s) (see 3.14.7) and noise cancelling microphone. The siren control functions and related characteristic sound patterns shall consist of manual and automatic wail, yelp, and "Hi-Lo" sound when applicable or specified. Plug-in connections and connecting cables, foot switch and all hardware necessary for normal siren/speakers operation shall be furnished. The siren unit shall have an amplifier capable of producing continuous warning tones with a power output of not less than 130 watts RMS with a two-speaker load when the amplifier is supplied with 13.6 volts DC input. Acoustic output shall be 100 db (A) minimum, measured @100' from the speakers. The speakers furnished shall have a minimum 100 watt RMS rating. In voice operation, the power output shall be a nominal 35 watts, with not more than 10 percent voice distortion from 300 to 3000 Hz. The public address amplifier shall be independent of the two-way (mobile) radio except that a common microphone and control housing group may be employed. The siren assembly (including parts installed in the passenger space of the emergency vehicle) shall pass the radio noise interference tests specified in SAE Standard J551B.

3.14.7 Speakers. Two (siren/public address/radio) speakers with a minimum 100 watt RMS rating shall be installed outside on the vehicle cab. The speakers shall be chrome-plated or polished metal, streamlined, weather-proof, on reinforced mounting to prevent drumming and vibration. Speakers shall be mounted in the following manner: Both speakers facing forward or 15 degrees off the center line of cab roof or enclosed in warning light bar. Speakers shall be connected in phase to prevent noise cancellation. Speaker location shall permit servicing of the vehicle without removing the speakers or interfering with the intent or vision of the warning lights.

3.15 Additional systems, equipment, accessories, and supplies.

3.15.1 Additional and optional equipment. The additional or optional system(s) equipment, accessories, and supplies shall be in addition to the standard ambulance component systems and devices specified herein. Optional items may be further described in authoritative documents. In no event shall the specified or furnished optional item(s) supersede or reduce the quality and intent of the ambulance, but shall enhance its design and purpose. The materials, devices, items, and fabrication if not specifical described shall be not less in quality, strength, performance, and services, than those normally provided by the most reputable manufacturers.

3.15.2 Mandatory miscellaneous equipment. Unless otherwise precluded elsewhere in this specification or contract, each ambulance shall be equipped with the following:

a. Two fire extinguishers; dry chemical minimum 5 lb. unit, quick-release bracket mounted in patient compartment and driver's compartment.
b. "No Smoking" signs conspicuously placed in cab and patient compartments, warning of oxygen use dangers.
c. Overhead grab rail, minimum 30 inches long, maximum 3 inch depth. on ceiling over the primary patient.
d. Battery charger "T" polarity plug-in outlet mounted on exterior body or fender for external battery charger (charger unit not fundable).
e. Mud-guards; to protect lower front end of body (for Type I).
f. Drug compartment; security compartment, minimum 768 cubic inches; with hidden hinged door with key lock in patient compartment.
g. High-intensity cot light; with flexible or adjustable shaft located near head of primary cot.
h. 12 volt socket for on-board equipment operation.

Note: Shore line connections prohibited (See 3.15.4.1)

3.15.3 Emergency access equipment for ambulance use.

	Required Qty.
1. Wrench, 12" with adjustable open end.	1
2. Screw driver, 12" with regular blade.	1
3. Screw driver, 12", Phillips type.	1
4. Hacksaw, with 12 wire (carbide) blades.	1
5. Pliers, 10" vise-grip.	1
6. Hammer, 5-pound, with 15" handle	1
7. Pry axe, with extendable handle.	1
8. Wrecking bar, 24". (Bar and two preceding items can either be separate or combined as a forcible entry tool).	1
9. Crowbar, 51" with pinch point.	1
10. Bolt cutter, 36" with 9/16" jaw opening.	1
11. Porta-power set	1
A. Hydraulic pump, with hoses, 4-ton capacity	2
B. Spreader (3/4" to 11" capability)	1
C. Wedge 3/8" to 3 1/4" capability	1
12. Shovel, folding type (i.e. military 'E' tool)	1
13. Double-action tin snip, minimum 8".	1
14. Manila ropes, each 50' long x 3/4" diameter. (optional nylon 50' x ½" diameter).	2
15. Small tool box for hand tools (optional)	1
16. Goggles for eye safety	

Note: Gasoline or electric powered cutting saws are not eligible for funding as part of extrication equipment for ambulance use. Power winch equipped vehicles will not be accepted for inspection or funding.

3.15.4 The medical equipment shall be that specified as Essential Equipment for Ambulances by the American College of Surgeons with certain additions by the Office of Transporation Safety. The types, manufacturers, and quantities may not always be consistent with local government desires. It is necessary, however, for uniformity and standardization to specify what shall be included aboard each ambulance funded under the Highway Safety Program.

To insure this uniformity and standardization each ambulance funded will be equipped with the following equipment:

	Min. Qty.
1. Portable suction apparatus, with wide-bore tubing and rigid pharyngeal suction tip. May be battery or electrically powered. Laerdal or equivalent.	1
2. Bag-mask ventilation unit, hand-operated with adult-, child- and infant size masks. Clear masks are preferable. Valves must operate in cold weather, and unit must be capable of use with oxygen supply.	1
3. Oropharyngeal airways, adult, child, and infant sizes.	2 ea.
4. Mouth-to-mouth artificial ventilation airways, for adults, and children. Commonly referred to as "S" tubes, Resusci-Tubes, etc. (May be combined with Item 3 above.	2 ea.
5. Portable oxygen equipment (Marion Valve or Equal) with adequate tubing and semi-open, valveless transparent masks in adult, child, and infant sizes. (Plus 1 extra D or E cylinder).	1
6. Mouth gags, either commercial or made of three tongue blades taped together and padded.	3
7. Sterile solutions, preferable in plastic bags, for wetting dressings, flushing chemicals, etc. 500 CC's NOT FOR INTRAVENOUS USE.	6

		Min. Qty.
8.	Universal dressings, approximately 10 inches by 36 inches, compactly folded and packaged in convenient size.	12
9.	Sterile gauze pads, 4" by 4".	200
10.	Bandages, soft roller, self-adhering-type, 6" x 5 yards.	24
11.	Aluminum foil, roll, 18" x 25', sterilized and wrapped.	1
12.	Adhesive tape, 3" wide.	2
13.	Burn sheets, sterile.	2
14.	Traction splint, lower extremity, hinged half-ring with commercial limb-support slings, padded ankle hitch and traction strap. (Hare Traction Splint or Pulsion Traction Splint).	1
15.	Padded boards, 4 1/2 feet long by 3 inches wide.	1
	Padded boards, 3 feet long, of material comparable to 4-ply wood for coaptation splinting of leg or thigh.	2 ea.
16.	Padded wooden splints, 15" by 3", for fractures of the forearm. (By local option, similar splints of cardboard, plastic, wire-ladder, or canvass slotted lace-on may be carried in the place of the above 36" and 15" boards.)	2
17.	Inflatable splints, uncomplicated, in addition to Item 16, or as substitute for the short boards. Arm and leg.	2 kits
18.	Spine boards, short and long, with accessories.	1 ea.
19.	Triangular bandages.	24 ea.
20.	Scoop stretcher (may substitute FW 69 x Build-A-Board)	1
21.	Shears, for bandages. Double-action or 7½" scissors.	1 pr.
22.	Obstetrical kit, sterile. Pre-packaged with instruments.	1
23.	Poison kit.	1
24.	Blood pressure cuff, and stethoscope pocket type.	2 ea.
25.	Cot, ambulance, multi-level, with pad and I V holder	1
26.	Stretcher chair with straps (Ferno-Washington Model 107c or equivalent).	1

ADDITIONAL ITEMS (OPTIONAL)	Allowable
27. Hot and cold packs (1 doz. per set).	1 set ea.
28. Technician's bags. (empty)	1
29. Cervical collars. (sm., med., lg.)	1 ea.
30. Pillows for ambulance cot, non-disposable.	2
31. Blankets for ambulance cot, non-disposable.	2
32. Sheets for ambulance cot, non-disposable.	24
33. Pillowcases for ambulance cot, non-disposable.	12
34. Towels for ambulance cot, non-disposable.	12
35. Emesis basin, plastic or disposable.	2
36. Urinal, plastic or disposable.	1
37. Thermometers with cases.	2
38. Thermos jug, 1 gallon maximum capacity.	1
39. Sand bags.	4
40. Patient restraints, arm and leg, sets.	1 ea.
41. Quartz digital clock mounted in patient compartment.	1
42. Ferno-Washington model 12 stretcher. (Or equivalent)	1
43. Flares, self-igniting, 30 minute.	12
44. Flashlights, battery powered 6V, stand-up lantern type	2
45. Gauntlets, foam insulated, vinyl coated, fluorescent orange.	2 prs.
46. ICC approved flag and reflector kit.	1
47. Tachograph; 90 MPH with multiday chart, plus siren recording	1
48. Hard hat, polyethylene	2

3.15.4.1 Non-Eligible or Restricted Equipment. The following items of medical equipment will not be considered eligible for funding due to budget limitations.

1. Physiological Patient Monitoring Telemetry Systems
2. Cardiac Monitors and Defibrillators
3. Portable Incubators or Isolettes
4. Mechanical Heart-lung Resuscitators
5. Surgical Instruments, except those in OB Pak
6. Intravenous Solutions and Administration Sets
7. Drugs or Medication, except poison antidote kit
8. Any item intended for or restricted to use by a licensed physician
9. Shoreline Connections - The Department of Transportation considers the connection of 110 volts of AC power from an external source to a vehicle (commonly referred to as Shoreline) to be unsafe in that it subjects the operators of such vehicles to an unwarranted risk of electrical shock. Adequate provisions have been made in these specifications for external charging devices which will accomplish basically the same purpose as Shoreline.

3.16 Preparation for painting, color, and markings.

3.16.1 Preparation for painting. Ambulance body and all attached equipment exterior surfaces, except polished metal parts, shall be thoroughly cleaned, treated, and coated with a firm primer and preservatives with rust inhibiting properties, and painted in the finish color as specified. Ferrous metal interior surfaces shall be painted or, when not exposed for painting, shall be treated or coated to resist corrosion. Chassis and chassis frame components shall be preserved and finished in accordance to industries standard practice.

3.16.2 Salt spray resistance. Treated exterior sheet metal of the ambulance body shall be capable of withstanding 250 hours of salt spray tested in accordance with ASTM B 117-64. The specimen used for the salt spray test shall be run through all steps of the cleaning and treating process, including priming. The primed specimen shall be scored from corner to corner using a sharp knife. After the test, the specimen panels shall exhibit no failure or rusting, including not more than 1/8-inch rust or blister creepage from the scored lines.

3.16.3 Color, paint, and finish. The exterior color of the ambulance shall be basically white in combination with orange stripe and blue lettering and emblems. The exterior finish shall be an acrylic composition paint. Final color coats of paint shall have a film not less than 1.25 mils. thick. The band (stripe) of orange not less than 6 inches wide, nor more than 14 inches wide shall encircle the entire ambulance body configuration at the belt line (below the lowest edge of cab windows). This band when viewed horizontally shall appear as a stripe near parallel to the road. The interior finish shall be the manufacturer's standard light color harmonizing with the color of upholstery. The final film of painted surfaces shall be smooth and uniform, free of grit, streaks, blushing, runs sagging, blisters, pin holes, or other irregularities of surface. Exterior finish paint shall not be required on the underbody and inside surfaces of the body skirting.

3.16.3.1 Color standards and tolerances. The exterior surface including the wheels shall be manufacturer's standard gloss white. The ambulance colors orange (stripe or band) and blue (markings) shall be the same as those specified as Safety Orange and Safety Blue in American National Standard z53.1-1974, Safety Color Code for Marking Physical Hazards. They shall comply with the following tolerances expressed in terms of Munsel hue, value (lightness), and chroma (saturation) as follows:

Ambulance Orange, 5.0YR 6.0/15 with tolerances in hue, value, and chroma of: Hue+ 6.25YR: Hue-, 3.75YR; Value+, 6.5; Value-, 5.5; Chroma+, unlimited; and Chroma-,13.

Ambulance Blue, 2.5PB 3.5/10 with tolerances in hue, value and chroma of: Hue+, 4.5PB, Hue-, 10.0B; Value+, 4.0: Value-, 3.0: Chroma+, unlimited; and Chroma-,8.

(Color tolerance charts containing the color standards and tolerances for Ambulance Orange and Ambulance Blue will be available from the National Highway Traffic Safety Administration (NHTSA, Office of Hazardous Materials), 400 - 7th St., Washington, D.C. 20590).

3.16.4 Emblems, and markings. The material for the emblems and markings shall be applied using reflectorized material conforming to Federal Specification L-S-300A; Type I, class 3 reflectivity 1. The reflective color used shall be blue (color a) & white. The emblems and markings shall be of the type, size, color and location as follows:

A. Front markings
   a. The work "AMBULANCE" in block, blue letters, not less than 4 inches high, shall be mirror image centered above the grill.

   b. Block type blue, "Star of life" conforming to 6.9, shall be not less than 3 inches, on a 4 inch white field, (size A) located both to the right and left of the word "AMBULANCE".

B. Side and rear markings
   a. The word "AMBULANCE" shall be in block blue letters on the white field, of not less than 6 inches in height, centered, along side, or under the "Star of life" (b) on each side and rear of the vehicle body.

   b. A block type blue "Star of life", conforming to 6.9 (size B) of not less than 12 inches on a white field. The "Star of life" emblems may be provided on each window glass of the rear doors, when white field space is limited.

C. Top markings
   a. Block type blue "Star of life", conforming to 6.9, (may be without the white Staff of Aesculapius), of not less than 16 inches, (Size C) shall be conspicuously centered between the warning lights on the roof top.

Note: The word "RESCUE" shall not be used on a D.O.T. funded vehicle.

3.17 Undercoating. Ambulance shall be undercoated in accordance with Mil. Std. 1223.

3.18 Rustproofing. Ambulance shall be rustproofed in accordance with Fed. Std. No. 297. Chassis manufacturer's rustproofing is not acceptable.

3.19 Data and caution plates. Data, caution, and identification plates or decals listing data specifically applicable to the vehicle and the furnished equipment shall be permanently and conspicuously installed on the vehicle. No other trademark(s), names, or other identification, other than authoritatively specified and the vehicle manufacturers name shall be applied to the vehicle. Data plates shall be of non-ferrous materials, except for instruction plates or decals mounted inside the vehicle, information required for data plates shall be inscribed or stamped in a manner that the legend will be discernable if inadvertently painted over.

3.20 Manuals and handbooks of instructions. The supplier shall furnish one copy of the vehicle operating instruction handbook. Repair manual, and parts book shall be maintained on file with local dealers. Also, an instruction handbook(s) shall be furnished for all ambulance related accessory components, equipment, systems furnished as part of parcel of the emergency medical care vehicle. The handbook(s) shall contain all installation and operating instructions, drawings, illustrations, manufacturers part numbers, lubricating instructions, assembly and disassembly instructions, and safety precautions to insure proper installation, operation, and maintenance. Wiring diagrams requirements, see 3.7.2.

3.21 Servicing and adjusting. Prior to acceptance of the ambulance by the purchaser the supplier shall service and adjust the vehicle in accordance with GSA Form 1455, and the operational checks (4.9.1), and shall perform the following: focusing of headlights; alignment of front wheels and steering wheel; truing all tires or replaced with true tires; complete vehicle lubrication service with grades or lubricants recommended for the ambient air temperature at the delivery point; and elimination of vehicle rattles, noises, and squeaks.

3.22 Special requirements. Specify (see 6.2) unusual operating conditions, miscellaneous items, exceptions, markings, end use, etc.; not specified herein. If in conflict with the manufacturer's standards and options, those specified shall take precedence.

3.23 Workmanship. Defective components shall not be furnished. Parts, equipment, and assemblies, which have been repaired or modified to overcome deficiencies shall not be furnished. Welded, bolted, and riveted construction utilized shall be in accordance with the accepted standards of industry. Component parts and units shall be manufactured to definite standard dimensions with proper fits, clearances and uniformity. General appearance of the vehicle shall show no evidence of poor workmanship.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. The supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the state. The state reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Certifications and qualified contractor/manufacturers. The supplier is obligated to prove that the vehicles, ambulance components and equipment offered meet or exceed the requirements of this specification. The supplier/contractor shall provide, prior to any bid opening, the following preliminary certified verification data to support items: a through t inclusive tests in 4.4.2, qualifying the contractors/manufacturer currently offered ambulance/equipment. One copy of each, the letter of certification, manufacturer's specification data, pictures, and brochures of the tested ambulance shall be forwarded to the Illinois Department of Public Health for preliminary review. Local governments may verify certifications by contacting the Division of Emergency Medical Services & Highway Safety, Illinois Department of Public Health.

4.2 Classification of inspection. The inspection requirements specified are classified as follows:

(a) First production ambulance inspection and test (see 4.3 and 4.4).
(b) Purchaser verification (see 4.8).
(c) Quality conformance inspection (see 4.9).
(d) State certification inspection(see 6.2(h)).

4.3 First production ambulance inspection. Unless otherwise specified (see 6.2), the first production ambulance of each type specified under contract shall be inspected in accordance with the examination in 4.3.2 and all tests under 4.4. The first ambulance produced under the contract shall be completely representative of the balance of the vehicles to be delivered under the contract. The purpose of the inspection shall be to determine vehicle conformity with the contract. The ambulance shall be inspected by the contractor at his plant under the direction and in the presence of purchasers representative(s). Inspections shall be conducted during normal daytime working hours. The cost of inspections, examination, all tests, and vehicle support, exclusive of personal expenses incurred by participating purchasers representatives shall be borne by the contractor. Acceptance of the first production vehicle shall not constitute a waiver by the purchaser of its rights under the provisions of the contract.

4.3.1 Vehicle weights. The first production vehicle shall be weighed to determine curb weight and distribution of curb weight on front and rear axle. The imposed loading on front and rear axle will be computed using the curb weight and the payload as specified in 3.5 thru 3.5.4. Calculated imposed loads on front and rear axle will be utilized to ascertain that suspension, axles and tires furnished are of adequate capacity to meet contract requirements.

4.3.2 Examination. First produced ambulance shall be visually examined to determine compliance with the requirements in section 3.

4.4 Tests

4.4.1 Test criteria. The ambulance shall be prepared for operation in accordance to manufacturer's recommendations, and 3.21, manned and loaded to simulate maximum payload conforming to type, class, and plan specified. Road test course shall be approved by the procuring activity, or purchaser representative. Substitution of new vehicle or replacement of major component(s) may require complete retest at the discretion of the purchasers representatives. If the ambulance manufacturer has previously tested a similar model vehicle with identical components, a certification for the specified test data verifying conformance to this specification may be provided in lieu of the first production ambulance tests. Certification(s) and previous test results, if available, may be forwarded to the procuring activity along with the vehicles engineering data prior to purchase or bid opening.

4.4.2 Performance tests. The ambulance and equipment as furnished, shall be tested to verify conformance of the following:

(a) Vehicular operation in temperature conditions (see 3.4.2).
(b) Vehicle physical dimensions (see 3.4.11 thru 3.4.11.6).
(c) Cooling system (see 3.6.4.5).
(d) Tire changing tools (see 3.6.13).
(e) 110 volt AC electrical power system (see 3.7.8).
(f) Warning lights (see 3.8.2).
(g) Flood light (see 3.8.3).
(h) Spotlight(s) (see 3.8.4).
(i) Body, static load test (see 3.10.5).
(j) Oxygen, main supply and installation, leak and pressure test (see 3.12 and 4.4.5).
(k) Suction aspirator system, performance test (see 3.12.3).
(l) Heating system(s) (see 3.13.4).
(m) Air conditioning system(s) (see 3.13.5).
(n) Ventilation (see 3.13.6).
(o) Environmental controls (see 3.13.7)
(p) Two-way radio and controls (see 3.14.4).
(q) Salt spray resistance (see 3.16.2).
(r) Road test (see 4.4.3).
(s) Water spray test (see 4.4.4).
(t) Siren-public address system (see 3.14.6)

4.4.3 Road test. The vehicle shall be subjected to a minimum 150 mile road test of which 75 miles shall be continuous miles on paved highways at highway speeds up to 70 mph; 30 miles on city streets; 15 miles on gravel or dirt roads at speeds up to at least 35 mph; and not less than 5 miles in simulated or actual cross-country operation at speeds applicable to the terrain. Cross-country operation is defined as travel over open fields, rolling and side-sloping hills, rough and muddy terrain. Ambulance shall meet performance requirements specified in 3.4.4 thru 3.4.10 during road tests or by certification. Balance of the 150 miles road test may be accumulated during other tests and checks requiring vehicle movements. After completion of the road test, vehicle shall be subject to the water spray test.

4.4.4 Water spray test. The ambulance shall be subjected to a water spray test for approximately 15 minutes. The spray shall be delivered by nozzles operating

at 25 pounds per square inch (psi) water pressure, sufficient in number and placed (approximately 3 feet from the body) to afford full coverage of sides, roof, front, rear and under carriage of the vehicle. Ambulance undergoing quality conformance inspection (4.9) shall be subjected to water spray test for not less than 2 minutes duration. Evidence of water leakage shall be cause for rejection until leaks are corrected.

4.4.5 Oxygen system tests. The installed medical oxygen system and components (see 3.12.1) shall be leak tested at 150 percent of operating pressure, for a time period of four hours. The system shall be tested with water nitrogen gas or equal and kept decontaminated. After the successful completion of tests, the system shall be capped, then tagged with date and signature of person and firm performing the tests.

4.5 Inspection failure of first ambulance. Failure of first production ambulance to meet requirements and successfully complete examinations and tests shall be cause for nonacceptance of any of the contract quantity, until deficiencies and evidence of the corrective action precludes recurrence of similar deficiencies. Failure of the vehicle to successfully complete test shall not constitute an excusable delay in meeting scheduled deliveries.

4.6 Test failure of first ambulance. Vehicle utilized for the road test shall successfully complete 150 miles of test. Rejection of the test vehicle shall be for deficiencies, including but not limited to the following:

(a) Damage caused by collision.
(b) Failure of any major component.
(c) Vibration due to misalignment of wheels, frame, driveshaft, etc.
(d) Vibration due to type of body construction or mounting.
(e) Evidence of abnormal tire wear due to misalignment or unbalanced wheels/tires.
(f) Failure of any vehicular safety device such as brakes, steering assembly, windshield washers and wipers, or electrical circuits.
(g) Evidence of structural weakness in any part of the vehicle, vehicle components, or accessories.
(h) Loose mountings of parts or accessories due to workmanship or vehicular operation.
(i) Failure of any vehicular performance requirements.

4.7 Production sample. Upon acceptance of the first production ambulance, it shall remain at the manufacturing facility as a production sample and shall be the last vehicle shipped on the contract. The contractor shall maintain the vehicle in a serviceable condition for the duration of the contract. Vehicle shall be then cleaned, serviced, and refurbished to the extent required for delivery of a new vehicle to the purchaser. (Single unit purchasers see 6.2,n).

4.8 Purchaser verification. Quality assurance operations performed by the supplier will be subject to purchaser verification at unscheduled intervals. Verification will consist of observation of the operations to determine that practices, methods, and procedures of the supplier's inspection are being properly applied. Failure of the supplier to promptly correct observed deficiencies shall be cause for suspension of acceptance until conformance to specification criteria has been demonstrated.

4.9 Quality conformance inspection. Unless otherwise specified (see 6.2), quality conformance inspection shall be applied to all production vehicles offered for acceptance under the contract. Quality conformance inspection shall consist of (a) through (e) as follows, and failure of any unit to pass an examination or test shall be cause to refuse acceptance of the vehicle until corrected.

(a) Production methods verification (see 4.8).
(b) Workmanship inspection (see 3.23).
(c) Ambulance operational checks (see 4.9.1).
(d) Water spray test (see 4.4.4).
(e) Preparation for delivery examination (see 4.9.2).

4.9.1 Operation checks. Operational checks of the ambulance shall cover all controls, electrical systems and devices, doors, windows, cabinets, accessories, in and outside the ambulance. Ambulance shall be driven at all speeds, turns made at minimum radii, brakes tested for dependability, checked for rattles and squeaks, and compliance to 3.21. All controls, and mechanisms shall function and operate as intended.

4.9.2 Preparation for delivery examination. Preservation, packaging, and marking for shipment as applicable shall be examined to determine compliance with section 5.

5. PREPARATION FOR DELIVERY

5.1 Preparation. Unless otherwise specified the ambulance(s) shall be preserved and packaged for mobile delivery in accordance with the supplier's standard commercial practice, insuring carrier acceptance and safe delivery to destination in compliance with regulations applicable to the mode of transportation.

6. NOTES

6.1 Intended use. The vehicles covered by this specification are intended for on and off the road emergency medical services. The ambulance is designed with a driver compartment or cab, a patient compartment accommodating one medical technician, and two litter patients. The ambulance (properly equipped and supplied) is intended to provide optimal emergency care, light extrication work at the scene of emergency, and intensive life support for at least one patient during transit.

6.1.1 Federal specification coverage. Federal specifications do not include all the varieties of ambulances as indicated by the title of the specification KKK-A-1822, or which are commercially available. This specification covers only the ambulances used to provide service under contract, or approved for funding by the Illinois Department of Transportation.

6.1.2 Precautions and observations. Due to the variety of ambulance models covered in this specification, purchasers should be aware that some items of equipment, components, etc., described herein are not necessarily compatible with all vehicles. It should be ascertained before specifying (ordering) that ambulance manufacturers offer such equipment, devices, or options, (reference manufacturer's data books, brochures) for the type and class ambulance desired.

6.1.3 Definition of Government-purchaser. Government or purchaser as used in the context of this document means; the State, or political subdivision Government, or any purchaser who cites this specification.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in the procurement document.
(a) Title, number, and date of this specification, and amendment number if any.
(b) Quantity, type, and class ambulance required (see 1.2.1).

(c) Patient compartment floor plan (plan A is standard). (See 3.1.5).

(d) Wheels, specify if dual rear wheels are specifically desired for type I vehicle (see 3.6.7).

(e) Tires, specify where snow tires instead of regular tires desired (see 3.6.8 and 3.6.9).

(f) Additional systems, equipment, accessories, and supplies (see 3.15 thru 3.15.4.1), cite additional parameters where necessary.

(g) Special requirements, state additions, changes, or deletions to the manufacturer's specifications (see 3.22).

(h) Inspection, quality assurance provisions (see section 4).
Inspection of vehicles procured under these specifications shall be conducted by a representative of the Division of Emergency Medical Services upon delivery to the Illinois Department of Public Health, 535 West Jefferson, Springfield, Illinois prior to delivery to the purchasing agency. Inspection shall consist of insuring conformity to state and federal requirements; quality conformance inspection (see 4.9); and adherence to highway safety project application requirements. If the vehicle is found acceptable, a letter certifying acceptability will be issued.

(i) Preparation for delivery, other than specified (see 5.1). State mode of delivery preferred.

(j) Procurement requirements (see 6.3).

(k) Warning light option (see 3.8.2).

6.3 Procurement requirements. Invitation for bids, contract or orders will contain the following contractual requirements (see 6.4 thru 6.7), except in those instances where it is determined that inclusion thereof would not be to the best interest of the government or purchaser.

6.4 Warranty. The manufacturer or contractor shall warrant the entire ambulance, furnished equipment, items and devices, (except 6.4.1), against parts failure or malfunction due to design construction, or installation, errors in assembly of components, defective material and workmanship, for a minimum period of 12 months or 12,000 miles of operation, exclusive of authorized accumulated driveaway mileage, whichever may occur first. The vehicle chassis, chassis component (drive line, etc.) and applicable body or cab may be warranted in accord with their standard vehicle warranty policy. Ambulance manufacturer or contractor shall not modify body, chassis, power train and/or any other component in such a way as to void original vehicle warranty.

6.4.1 Warranty exceptions. Unless caused by defective material and workmanship, the manufacturer or contractor need not assume liability or reimburse the Government regardless of vehicle age and mileage. The following may be considered warranty exceptions.

(a) Abuse, negligence, or alteration of original parts or adjustments.
(b) Engine tune-ups.
(c) Brake adjustments.
(d) General tightening, head lamp adjustments.
(e) Wheel alignment.
(f) Tires, tubes, and batteries (if warranted by their manufacturers).
(g) Miscellaneous expense such as gasoline, towing, telephone, traveling, lodging, loss of personal property, or sales tax.

6.5 Illustrations and drawings. When specified in the invitation for bids (see 6.2), the bidder shall furnish with his bid two sets of illustrations and outline drawings with dimensions to assist the purchasing and using agencies in determining whether the vehicles offered are adequate to perform the specified services and requirements.

6.6 Repair parts and service. As a continuous operation of the vehicles contemplated by this specification is of utmost importance, it is necessary that the successful bidder be in a position to render prompt service and to furnish replacement parts. Accordingly, bidders shall indicate the extent of their ability to render prompt service by furnishing a list of branch offices or agencies where complete stocks of repair parts are maintained and can be secured within a reasonable time after ordering by part number from the manufacturer's part book and at such discount as may be quoted from year to year by the manufacturer of the vehicle purchased under this specification.

6.7 Statement of Origin or bill of sale. A manufacturer's statement of Origin or Bill of Sale showing the applicable purchase order number is required for each vehicle procured under this specification. Unless otherwise specified, such documents shall be forwarded to the consignee.

6.8 Oxygen tanks. Following are the approximate dimensions, weights, and capacities of the various size oxygen cylinders referenced in this specification:

	TANK	
	D	M
Outside diameter (inches)	4 1/2	7
Overall heights, without valve (inches)	20	47
Capacity (gallons)	95	800
Capacity (liters)	360	3000
Capacity, flow @3 to 10# (minutes)	40	325
Capacity (cubic feet)	13	106
Weight, empty (pounds)	13	75
Weight, full (pounds)	14	83

6.9 Star of Life. The "Star of Life" (figure 4) is a six-barred cross upon which is superimposed the Staff of Aesculapius (es "cu-la" pi-us) who, in Roman Mythology, was the god of medicine and healing. Following are the dimensions referenced in this specification:

Dimensions:	Size A	Size B	Size C
Length of bar	3"	12"	16"
Width of bar	3/4"	3"	4"
Length of Staff	2 1/2"	9 1/2"	12 1/2"
White background (if required)	4" square	14" square	18" square

All angles 60°
Deviations shall be proportionate.

MILITARY INTERESTS:
Army - AT
Air Force - 84

CIVIL AGENCY COORDINATING ACTIVITIES
DOT
HEW
VA

PREPARING ACTIVITY: STATE OF ILLINOIS
DIVISION OF TRAFFIC SAFETY
ILLINOIS DEPARTMENT OF TRANSPORTATION

DIVISION OF EMERGENCY MEDICAL SERVICES & HIGHWAY SAFETY
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

INDEX

References are to paragraphs and page number

A

Acceleration 3.4.7
Additional systems, equipment, accessories and supplies..... 3.15
Air Conditioning criteria..... 3.13.5
Air filter..... 3.6.4.2
A.C. 110 volt electric power..... 3.7.8
Alternator..... 3.7.6
Ambulance types I and II.....
Angle of approach, ramp breakover and departure..... 3.4.11.5
Antenna mounting (purchasers furnished radio)..... 3.14.3
Antifreeze..... 3.6.4.5.2
Applicable documents..... 2
Automatic transmission..... 3.6.5.2
Axle, ratings, ratios..... 3.6.5.6

B

Battery..... 3.7.7
Body general construction..... 3.10.5
Body mounting..... 3.10.7
Body or patient area..... 3.10
Brake systems, service, and parking..... 3.6.5.7
Brakes..... 3.4.5
Bumpers and steps..... 3.9.6

C

Cab body, driver compartment and equipment..... 3.9
Cab connecting bellows, for type I vehicle..... 3.9.9
Cab to axle (CA), type I vehicle..... 3.5.6
Ceiling IV hooks..... 3.11.9
Chassis, power unit, and components..... 3.6
Classification..... 1.2
Classification of inspection..... 4.2
Color, paint, and finish..... 3.16.3
Combination stretcher chair..... 3.11.5.1
Communications equipment..... 3.14.1
Controls and operating mechanisms..... 3.9.4
Cooling system..... 3.6.4.5
Curb weight..... 3.5.1

D

Data and caution plates..... 3.19
Definition of Government, purchaser..... 6.1.3
Design..... 3.1.1
Door latches, hinges, and hardware..... 3.10.9
Doors..... 3.10.8
Drive train..... 3.6.5
Driver compartment switches..... 3.8.7.1
Driver compartment, cab body structure..... 3.9.1
Driver's compartment environmental equipment..... 3.13.2

E

Electrical systems and components 3.7
Emblems and markings 3.16.4
Emergency access equipment for ambulance use 3.15.3
Emission control..... 3.6.4.3
Engine hood..... 3.9.8
Engine low temperature starting..... 3.6.3.2
Environmental climatic equipment..... 3.13
Environmental systems..... 3.13.1
Examination..... 4.3.2
Exhaust system..... 3.6.4.6
Exterior lighting..... 3.8.1
Extrication equipment stowage accommodations..... 3.11.2
Extrication equipment requirements..... 3.15.3

F

Federal specification coverage..... 6.1.1
Fenders..... 3.9.7
Figures 1-2 (type I & III).....
Figures 3-4 (type III & Star of Life).....
First production ambulance..... 4.3
Flood and loading lights (exterior)..... 3.8.3
Floor coverings and color..... 3.10.11
Floor plan of patient-technician compartment..... 3.1.5
Fording..... 3.4.10
Fuel range..... 3.4.9
Fuel system..... 3.6.4.4

G

Gasoline engine..... 3.6.3.3
General vehicular design, types, and floor plans..... 3.1
Gradeability..... 3.4.8
Ground clearance..... 3.4.11.4
Gross vehicle weight rating (GVWR)..... 3.5.3

H

Heating criteria..... 3.13.4
Height (patient compartment)..... 3.10.4
Height (vehicle)..... 3.4.11.3
Horn..... 3.7.5
Hub caps..... 3.6.14

I

Ignition system..... 3.7.3
Illustrations and drawings..... 6.5
Inner tubes..... 3.6.9
Inspection failure of first ambulance..... 4.5
Insulation..... 3.10.16
Intended use..... 6.1
Intercom system..... 3.14.5
Interior lighting..... 3.8.5
Interior stowage accommodations..... 3.11.1
Interior surfaces..... 3.10.17
IV holders and hooks..... 3.11.9

L

Length (patient compartment)..... 3.10.4
Length (vehicle)..... 3.4.11.1
Lighting ambulance exterior and interior..... 3.8
Litter fasteners..... 3.11.7
Location of equipment and supplies..... 3.11.1.1

M

Manuals and handbooks of instructions..... 3.20
Manual transmission and transfer case..... 3.6.5.3
Materials..... 3.3
Medical, surgical, and bio medical equipment..... 3.15.4

N

Noise and sound level limits, exterior..... 3.4.3
Notes (section)..... 6

O

Oil filter..... 3.6.4.1
Operation and performance..... 3.4.1
Operational checks..... 4.9.1
Outside rearview mirrors..... 3.9.5
Oxygen and suction systems and equipment..... 3.12
Oxygen system test..... 4.4.5
Oxygen tanks..... 6.8

P

Parameters and options..... 1.4
Partition..... 3.10.15
Partition with access between compartments type II..... 3.10.2
Patient compartment environmental equipment..... 3.13.3
Patient compartment facilitations..... 3.11
Patient compartment illumination..... 3.8.6
Patient compartment interior dimensional parameters..... 3.10.4
Patient compartment switches..... 3.8.7.2
Patient restraints..... 3.11.8
Payload allowance..... 3.5.2
Performance tests..... 4.4.2
Power plant heaters..... 3.6.3.2.1
Power unit components..... 3.6.4
Power unit, engine..... 3.6.3
Precautions and observations..... 6.1.2
Preparation for delivery..... 5
Preparation for delivery examination..... 4.9.2
Preparation for painting, color, and markings..... 3.16
Procurement requirements..... 6.3
Production sample..... 4.7
Purchaser verification..... 4.8

Q

Quality assurance provisions..... 4
Quality conformance inspection..... 4.9

R

Radio interference suppression..... 3.7.10
Ratings (components)..... 3.5.5
Repair parts and service..... 6.6
Requirements (section)..... 3
Responsibility for inspection..... 4.1
Road test..... 4.4.3
Rustproofing..... 3.18

S

Salt spray resistance..... 3.16.2
Scope and classification..... 1
Seat safety belts and anchorages..... 3.11.6
Servicing and adjusting..... 3.21
Shock absorbers..... 3.6.5.12
Shoreline..... 3.15.2(1) & 3.15.4.1(9)
Siren public address system..... 3.14.6
Spare tire, and storage..... 3.6.10
Speakers..... 3.14.7
Special requirements..... 3.22
Special traction (rear end) differential..... 3.6.5.8
Speed..... 3.4.6
Spotlights..... 3.8.4
Spring stops..... 3.6.5.11
Squad bench, seats, and back rests..... 3.11.4
Standard ambulance..... 1.3
Standard mandatory miscellaneous equipment..... 3.15.2
Star of Life (emblem)..... 6.9
Statement of origin or bill of sale..... 6.7
Steering..... 3.6.6
Stepwell (side door)..... 3.10.12
Stowage compartments and cabinets design..... 3.11.3
Stretcher, cots, and litters..... 3.11.5
Suspension..... 3.6.5.10
Switches and control devices..... 3.8.7

T

Table 1, stretcher, cot, and litters.....
Technician seating..... 3.10.3
Temperature conditions..... 3.4.2
Test criteria..... 4.4.1
Test failure of first ambulance..... 4.6
Tests..... 4.4
Tire chain clearance..... 3.6.11
Tires..... 3.6.8
Tools (tire changing)..... 3.6.13
Turning diameter..... 3.4.11.6
Two way (mobile) radio..... 3.14.2
Types, classes, and floor plans..... 1.2.1
Types, ambulance..... 1.2.1

U

Undercoating..... 3.17

Vehicle, ambulance components, equipment, and accessories..... 3.2
Vehicle lubrication..... 3.6.2
Vehicle operation, performance and physical characteristics..... 3.4
Vehicle physical dimensional requirements..... 3.4.11
Vehicle weight ratings and payload..... 3.5
Vehicle weights..... 4.3.1
Ventilation criteria..... 3.13.6

W

Warning lights..... 3.8.2
Warranty..... 6.4
Water spray test..... 4.4.4
Weight distribution..... 3.5.4
Wheels and tires..... 3.6.7
Wheel tire balancing..... 3.6.12
Wheelhousings..... 3.10.13
Width (patient compartment)..... 3.10.4
Width (vehicle)..... 3.4.11.2
Windows..... 3.10.14
Windshield wipers and washer..... 3.7.4
Wiring..... 3.7.2
Workmanship..... 3.23