General Services Administration
Federal Supply Service
Washington, DC 20406

NOTICE

Attached is a copy of the revised Federal Specification for the "Star of Life Ambulance" (KKK-A-1822A) dated April 1, 1980.

The object of the document is to provide the public with a Nationally recognizable standardized ambulance to administer prehospital emergency medical services.

This document should be very carefully reviewed. It contains major technological changes since the original KKK-A-1822, which it supercedes.

Additional copies of this specification may be obtained FROM:

General Services Administration
Specification and Consumer Information
Distributions Section (WFSIS)
Washington Navy Yard, Building 197
Washington, DC 20407

KKK-A-1822A
April 1, 1980
SUPERSEDING
Fed. Spec. KKK-A-1822
January 2, 1974

FEDERAL SPECIFICATION

AMBULANCE

Emergency Medical Care Surface Vehicle

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE, PURPOSE AND CLASSIFICATION

1.1 Scope. This document covers ambulances, (except the military field ambulance) which can be commercially produced and purchased. The ambulances are self propelled front or rear wheel driven (4 x 2), or four wheel driven (4 x 4), and warranted by the supplier as specified in section 6 herein. This document may be used by any purchaser desiring to procure an ambulance, and the applicable additional systems and equipment. Purchasers should follow the guidelines in section 6, paragraph 6.2 to aide them with the ordering data necessary to prepare a requisition.

1.1.1 Definition of Ambulance. The ambulance is defined as a vehicle for emergency care which provides a driver compartment and a patient compartment to accommodate emergency medical technician (EMT) and two litter patients so positioned that at least one patient can be given intensive life-support during transit; which carries equipment and supplies for emergency care at the scene as well as during transport, for two-way radio communication, for safeguarding personnel and patients under hazardous conditions, and for light rescue procedures; and which is designed and constructed to afford maximum safety and comfort, and to avoid aggravation of the patient's condition, exposure to complications, and threat to survival.

1.1.2 Purpose. The purpose of this document is to provide specifications and test parameters approved by the U.S. Department of Transportation's National Highway Traffic Safety Administration for the manufacture of ambulances authorized to display the "Star of Life". It establishes Federal standards for the design, performance, equipment, essential criteria, and provides a practical degree of standardization, thereby achieving a Nationally recognized ambulance. Ultimately, the object of this document is to provide ambulances nationwide that are prepared for "worse case conditions", properly constructed, easily maintained and when professionally staffed, and provisioned, will reliably function in prehospital emergency medical service.

1.1.3 Certified "Star of Life" Ambulance. After January 1, 1981, the ambulance manufacturer shall provide purchaser(s) with an authenticated certification document and label (see 3.19, page 36) for all ambulances certified as a "Star of Life" ambulance. These verify that the ambulance complies to this specification and applicable amendments (if any), in effect on the date of manufacture (see 4.3). Only ambulance(s) certified may display the registered "Star of Life" symbols as defined by the U.S. Department of Transportation's (DOT), National Highway Traffic Safety Administration (NHTSA) (see marking figure 4).

1.2 Classification.

1.2.1 Ambulance types, classes, and floor plans. The authorized "Star of Life" ambulances shall be of the following: (to specify see 6.2 page 43).

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

Class 1 - Two rear wheel driven (4 x 2).

Class 2 - Four wheel driven (4 x 4).

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

Floor plan B - Elevating cot and wheeled cot-bench (3.1.5; 3.11.5) optional.

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

Class 1 - Two rear wheel driven (4x2).

Class 2 - Four wheel driven (4x4).

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

Floor plan B - Elevating cot and wheeled cot-bench (3.1.5; 3.11.5)optional.

Type III - Specialty van, forward control (FC) integral cab-body or containerized modular ambulance (3.1.4 and figure 3).

Class 1 - Two rear wheel driven (4x2).

Class 2 - Four wheel driven (4x4).

Class 3 - Two front wheel driven (4x2). (If available).

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

Floor plan B - Elevating cot and wheeled cot-bench (3.1.5; 3.11.5) optional.

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:

L-S-300 - Sheeting and Tape, Reflective, Nonexposed Lens, Adhesive Backing.

RR-C-901 - Cylinders, Compressed Gas: With Valve or Plug and Cap; ICC3aa.

(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, DC 20402.

(Single copies of this document and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Philadelphia, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Houston, Denver, San Francisco, Los Angeles, and Seattle, WA.

(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, Rustproofing, Undercoating, Identification Marking, Data Plates, and Warrantly 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 and Regulations:

40 CFR 86: Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines.

47 CFR, Part 89: Public Safety Radio Services (FCC)

49 CFR 393: Federal Motor Carrier Safety Regulations (FMCSR)

49 CFR 571: Federal Motor Vehicle Safety Standards (FMVSS)

(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.

State of California Vehicle Code of California:

(Application for copies should be addressed to the Department of Motor Vehicles, 2570 - 24th Street, Sacramento, California 95809).

The 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:

J163 : Low tension wiring and cable terminals and splice clips.
J245 : Engine rating code, spark ignition.
J270 : Engine rating code, diesel.
J537 : Storage batteries.
J538 : Grounding of storage batteries.
J541 : Voltage drop for starting motor circuits.
J551 : Measurement of electromagnetic radiation from motor vehicles.
J553 : Circuit breakers.
J555 : Truck, truck-tractor, trailer, and motor coach wiring.
J561 : Electrical terminals, eyelet and spade type.
J562 : Nonmetallic Loom
J638 : Test procedure and ratings for hot water heaters for motor vehicles
J639 : Safety practices for mechanical vapor compression refrigeration equipment or systems used to cool passenger compartment of motor vehicles
J689 : Approach, departure, and ramp breakover angles
J695 : Turning ability and off tracking.
J858 : Electrical terminals, blade type.
J928 : Electrical terminals, pin and receptacle type.
J1128: Low tension primary cable.

(Application for copies should be addressed to the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096).

Truck Body and Equipment Association (TBEA), Inc.:

AMD Standard 001 - Static Load Test for ambulance body structure.
AMD Standard 002 - Body door retention components tests.
AMD Standard 003 - Oxygen tank retention system.
AMD Standard 004 - Litter retention system.
AMD Standard 005 - Ambulance Electrical systems.
AMD Standard 006 - Sound level test code.

(Application for copies should be addressed to the Truck Body and Equipment Association, Inc. (TBEA), Ambulance Manufacturers Division, Suite 1220, 5530 Wisconsin Avenue, NW., Washington, DC 20015).

National Fire Protection Association (NFPA):

National Electric Code (NEC)

(Application for copies should be addressed to the National Fire Protection Association (NFPA), 470 Atlantic Avenue, Boston, MA 02210).

International Mobile Air Conditioning Association, Inc.:

IMACA Standard 200

(Application for copies should be addressed to the International Mobile Air Conditioning Association, Inc., 6116 North Central Expressway, Dallas, TX 75206).

Electronic Industries Association, Standards:

RS152B - Minimum Standards for Land Mobile Communication FM or PM Transmitters.
RS204A - Minimum Standards 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 Signaling Standard.

(Application for copies should be addressed to the Electronic Industries Association, 2001 Eye Street, NW., Washington, DC 20006).

Illumination Engineering Society, (IES):

Guide for Calculating,
The Effective Intensity of Flashing Signal Lights

(Application for copies should be addressed to the Illumination Engineering Society, 345 East 47th Street, New York, New York 10017).

American Association of Motor Vehicle Administrators, (AAMVA).

Approval of Motor Vehicle Safety Equipment.

(Application for copies should be addressed to the American Association of Motor Vehicle Administrators, 1201 Connecticut Avenue, Suite 910, Washington, D.C. 20036).

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.

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 1 or 2 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. (see figure 1, page 48).

3.1.3 Type II ambulance. Type II vehicle, class 1 or 2 shall be (truck) manufacturer's standard commercial, long wheelbase, forward control (FC), integral compact van. This van (body) vehicle shall be suitable for subsequent conversion/ modification, and equipped as an ambulance in compliance to the requirements herein. (FC is defined as a vehicle having the steering device forward of the front axle and an engine compartment which is partially located between the driver and the assistant (see figure 2, page 49).

3.1.4 Type III ambulance. Type III, class 1, 2, or 3 shall be a specialty van, forward control (FC) style, unitized cab and body, or provided with a containerized modular constructed transferrable body. The chassis or front section cab-chassis shall be suitable for the subsequent fabrication, conversion or modification into an ambulance incorporating the requirements and the equipment specified herein (see figure 3, page 50).

3.1.5 Floor plan of patient compartment. Unless otherwise specified (see 6.2), floor plan "A" loading arrangement shall be provided in the patient's compartment ambulance body proper. All litters shall be loaded to position the heads of the patients forward in the vehicle. The following plan of patient - EMT 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 EMT.

Floor plan B - One patient (primary patient) on a wheeled elevating cot and one secondary patient lying on a wheeled non-elevating bench type cot which is also capable of accommodating three seated patients (see cots 3.11.5); and one seated EMT (see 3.10.3).

NOTE: It is preferrable that the primary patient be positioned on the left side or centered in the ambulance patient compartment. 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 body, equipment, devices, medical accessories and electronic equipment to be delivered under this contract shall be standard commercial products, tested and certified, to 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 body, 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 interchangeability between similar vehicles, alike equipment, items, and accessories specified for all ambulance units under contract.

3.3 Materials. The materials shall be new or new reclaimed materials, 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 in section 3, shall be met with the ambulance laden with all specified equipment and devices installed and operating at maximum power-consuming condition, i.e., air conditioning, lights, 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. (see 4.4)

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, exception siren, shall not exceed Federal regulations.

3.4.4 Vehicle performance. The ambulance shall provide a smooth, stable ride, with minimum noise and vibration. Test under 4.4.4.

3.4.5 Brakes. The ambulance as delivered to the user shall comply to performance values required by Federal Motor Vehicle Safety Standards (FMVSS).

3.4.6 Speed. The vehicles shall be capable of a sustained speed of not less than 55 miles per hour (mph), over dry, hard surfaced, level roads, at sea level, and tested under normal ambient conditions. Test under 4.4.4.

3.4.7 Acceleration. Vehicle shall have a minimum average acceleration rate at sea level of 0-55 mph within 30 seconds. Test shall be performed under normal ambient conditions. Test under 4.4.4.

3.4.8 Gradeability. The vehicle shall be capable of ascending at least 100 feet from a standing start, and stop and restart three (3) consecutive times during a six (6) minute period while ascending a dry, smooth slope having a minimum grade of 17 percent if a 6 cylinder engine, and a 25 percent grade when an 8 cylinder engine is furnished class 1 and 3 ambulances. The class 2 vehicle shall be capable of ascending a 30 percent grade regardless which engine (6 or 8 cyl.) is furnished, without stalling or overheating while being tested. Gradeability tests shall be performed under normal road and ambient conditions, under 4.4.4.

3.4.9 Fuel range. The ambulance shall be capable of being driven for at least 150 miles without refueling under encountered environmental conditions, in 4.4.4.

3.4.10 Fording. The vehicle shall be capable of three (3) fordings while keeping the patient compartment dry, without stalling engine, or damage to running gear, while being driven through at least eight inches of water, at speeds of five to ten mph for a distance of at least 100 feet. Test under 4.4.4.

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(s) with single rear wheels shall not exceed 86 inches, and 96 inches for vehicles with dual rear wheels, excluding mirrors and spotlight(s).

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. shall have a minimum of six (6) inches of ground clearance. The vehicle's body (skirts) components shall provide not less than eight (8) inches of running clearance.

3.4.11.5 Angle of approach, ramp breakover, and departure. The ambulance loaded to the G.V.W. (including payload 3.5.2), with bumpers and rear step (down if folding style) shall provide not less than the following clearance, measured in accordance with SAE J689:

Approach angle	20°
Ramp breakover	10°
Departure angle	10°

3.4.11.6 Turning clearance. Righthand and lefthand turning clearance circle of the vehicle shall not exceed 3.1 feet per foot of vehicle length in accordance with SAE J695.

3.5 Vehicle weight ratings and payload.

3.5.1 Curb weight. Curb weight is the weight of the complete ambulance, and is defined as: chassis, cab and body, including all the equipment specified, and full complement of fuel, lubricants, and coolant.

3.5.2 Payload allowance. A minimum of 1,000 pounds for single rear wheel vehicle, and 1,500 pounds for dual rear wheel vehicle's payload allowance shall be provided over and above the curb weight (see 3.5.1) of the vehicle. The payload shall consist of personnel, patients (computed at 150 pounds per occupant), and miscellaneous support supplies and devices appropriately distributed within the vehicle.

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 vehicle's 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. (also see 3.19).

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 vehicle's weight is on the front suspension, (see 4.4.3). In addition, the ambulance manufacturer shall assure that the completed ambulance/vehicle center of gravity or CG is within the chassis manufacturer's recommended parameter for the model furnished.

3.5.5 Ratings. Vehicle and component ratings shall be the manufacturer's published ratings, and shall not be raised above the chassis manufacturer's rating. 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 50 percent of the outside body length forward of the rear axle centerline, plus cab to body clearance. Bodies designed with wheel openings shall have the rear wheels centered, ± 2 inches within the opening.

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 rpm without undue vibration, strain, or overheating of engine parts.

3.6.3.2 Engine low temperature starting. Unless otherwise specified, engine shall start satisfactorily without the aid of preheating devices at -20° F when a gasoline engine is furnished, and 32° F when a diesel engine is specified. Auxiliary heating and/or starting devices shall be provided to meet other starting requirements at the option of ordering activity. Verification test to be preformed during environment test.

3.6.3.2.1 Power plant heaters, minimum -30° F startability. When specified in 3.15.3 item 15, the manufacturer's standard power plant heater(s) shall be furnished for the engine, which permits starting an engine at -30° F. (Coolant heater, or immersion type crankcase and battery heaters). These 115 VAC power plant heater(s) shall be switched and connected to the vehicle's 115 VAC system (see 3.7.8 and figure 6) so that it can only be energized from utility power.

3.6.3.3 Gasoline engine. Engine shall be a liquid-cooled six (6) or eight (8) cylinder as specified (see 6.2) internal combustion engine 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 the requirements specified in 3.4. Net horsepower ratings shall conform to SAE J245. Vehicle(s) being offered/supplied with catalytic converters shall be identified to all purchasers.

3.6.3.4 Diesel engine. When specified (see 6.2) chassis manufacturer's standard horsepower/displacement diesel engine and power train shall be provided complying with requirements of 3.4. Net horsepower rating shall conform to SAE J270.

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 Air pollution control. Vehicles destined for the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam and American Samoa, shall comply with the Environmental Protection Agency (EPA) Regulations governing Control of Air Pollution from New Motor Vehicles and New Motor Vehicle Engines in effect on date of manufacture of the chassis/engine. In addition, vehicles destined for California shall comply with State of California regulations governing air pollution control in effect the date of manufacture. When specified (3.15.3-16), the vehicle shall comply with the EPA high altitude regulations. For other vehicles, the chassis/engine manufacturer's export vehicle emission package shall be furnished. Export package shall be designed for continuous vehicle operation on regular grade leaded gasoline, (see 3.22.2) unless otherwise specified.

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 18 gallons. If more than one tank is furnished, tanks shall be interconnected, but separately controlled, and shall have a dash-mounted fuel gauge controlled by a selector switch, which will permit separate fuel level readings for each tank. Class 2 ambulance shall have the fuel tank(s) protected by a metal shield (skid-plate), and shall be located in an area which will be free from hazards encountered in off-road, cross-country operation. When specified (see 3.15.3-1) an additional fuel tank shall be furnished, providing a total minimum of 30 gallons capacity.

3.6.4.5 Cooling system. The engine cooling system shall be a closed, air free liquid state type, with a coolant overflow recovery tank, and compensating system. The supplier shall provide the heaviest duty components and maximum size cooling system available from the chassis manufacturer applicable to the vehicle offered. The cooling system design shall maintain the engine at safe operating temperatures at all driveable altitudes and grades encountered during on and off road vehicle use. Verification test; the cooling system shall be capable of allowing the engine to idle at 1000 rpm + 50, for a period of not less than 40 minutes, at sea level in ambient temperature of 95° F, + 2°, with full air conditioning, and the primary ambulance warning lighting loads on during test (4.4.2).

3.6.4.5.1 Anti-freeze. The cooling system shall be protected with a 50/50 solution of permanent type anti-freeze.

3.6.4.6 Exhaust system. Vehicle shall be equipped with an exhaust system in accordance with Federal Motor Carrier Safety Regulations, part 393.83. The exhaust system shall be suspended using not less than three (3) hangers excluding the manifold attachment. The exhaust shall discharge at the side(s) of ambulance away from fuel tank filler pipe(s) and door(s), to minimize fumes and contaminants entering the interior.

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 the lowest gear ratio by the engine. Transmission and controls shall comply with FMVSS 101 and 102.

3.6.5.2 Automatic transmission. Unless otherwise specified (see 3.6.5.2.1), a continuous drive automatic transmission shall be provided. The transmission shall provide not less than three speeds forward and one reverse and shall be equipped with the chassis manufacturer's oil-cooler.

3.6.5.2.1 Automatic transmission heavy-duty oil cooler. When specified (see 6.2 or 3.15.3 no. 19). A heavy-duty fin type transmission oil cooler in addition to the manufacturer's basic cooler (3.6.5.2) shall be provided, in any suitable location except behind the radiator.

3.6.5.2.2 Manual transmission. (type I class 2 only). When specified (see 6.2), a four forward speed and one reverse speed manually shifted, synchronous type transmission shall be provided. A permanent shift pattern located on the shift knob or decal within the cab shall be furnished.

3.6.5.3 Transfer case for class 2 ambulance. Unless otherwise specified (see 6.2), part-time four-wheel drive system shall be provided for class 2 vehicles. These vehicles shall be furnished 2-speed transfer cases. A shift pattern located on the shift knob or decal within the cab shall be provided. Front-wheel drive hubs (see 3.6.5.9), and special traction rear-end differential (see 3.6.5.8), shall be furnished 4x4 vehicles when and as specified.

3.6.5.4 Clutch. Vehicles with manual transmissions shall be furnished with the manufacturer's largest heavy-duty clutch available for the engine and model 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. Modifications 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. When specified (see 6.2), that the vehicle is used in mountainous terrain, manufacturers shall provide their accommodating highest axle ratio.

3.6.5.7 Brake system, service and parking. Chassis manufacturers heaviest duty power assisted brakes; linings, and parking brake shall be furnished on the chassis model offered.

3.6.5.8 Special traction (rear end) differential. A positive traction, limited slip, or automatic locking type differential shall be furnished, on all single wheeled class 1 vehicles. When specified (see 6.2), class 1 dual rear wheeled, and class 2, 4-wheel drive rear axle shall be furnished with a special traction differential.

3.6.5.9 Drive hubs, front wheel, (4x4, class 2). Unless otherwise specified, automatic type front wheel locking hubs shall be provided.

3.6.5.10 Suspension. Vehicle shall be equipped with matched sets of springs, torsion, or air suspension system components. Components shall have a rated capacity in excess of the load imposed on each member. For better riding quality, class 1 vehicle's springs shall have chassis manufacturer's lowest clamped deflection rating for the model offered. Suspension stabilizer devices shall be furnished when available from chassis manufacturer for the model chassis furnished.

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

3.6.5.12 Shock absorbers. Shock absorbers, double-acting type, heaviest duty available from chassis manufacturer for model offered shall be furnished on the front and rear axles.

3.6.6 Steering. The manufacturer's standard power assisted steering with a separate oil cooler (if required) shall be furnished. Steering system shall achieve the turning circle specified in 3.4.11.6.

3.6.7 Wheels. Unless otherwise specified (see 6.2), types I and III vehicles shall be equipped with dual rear wheels. Type II shall be equipped with single front and rear wheels. 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, chassis manufacturer's standard tires furnished for the GVW of the vehicle. All tires furnished shall be alike and comply to FMVSS 120. To provide a softer riding quality of the loaded ambulance, the tires shall be inflated only to the minimum cold inflation air pressure absolutely necessary to support the load on each tire measured at the ground (not necessarily the GVWR) complying to 4.4.3. The manufacture shall provide instruction for the correct front and rear tires pressures required for the ambulance GVW.

3.6.9 Inner Tubes. When tube type tires are furnished, inner tubes shall conform with the recommendations of the Tire and Rim Association, Inc.

3.6.10 Spare tire and storage. One inflated spare wheel/tire assembly identical to those on the vehicle shall be furnished. The spare assembly shall be stored in an accessible weather protected compartment, or area. (On a rack, under type II vehicle will be acceptable). Access door shall be fitted with suitable latch and lock. This spare assembly shall be accessible without removal of the patients from the compartment. Loose or removable panels/door shall not be acceptable. The spare assembly and tools shall have restraining device(s) to eliminate rattling. The carrier design shall enable removal or mounting of the spare assembly using only the tools specified in 3.6.13. (see 3.11.3)

3.6.11 Tire chain clearance. Tire chain clearance shall be provided the right and left side driving wheels. Sufficient chain clearance shall be provided to permit off road operation with the ambulance loaded to maximum payload.

3.6.12 Wheel-tire balancing. Wheel/tire, hubs, and brake drum assemblies of the vehicle shall be in balance to a minimum of 60 mph.

3.6.13 Tools (tire changing). Vehicle shall be furnished with tools required for exchanging mounted tire assembly with the spare assembly and shall include at least a jack, jack handle, and wheel nut wrench. The jack height, when closed, shall permit its location under the axle or other satisfactory lift point at any wheel with the tire flat. The jack, without having to block the jack, shall be capable of raising any wheel of the loaded vehicle to a height adequate to permit removal and replacement of the wheel and tire assembly. Tools shall be stored in accordance with 3.6.10.

3.6.14 Hubcaps. Manufacturer's (OEM) standard hubcap or wheel cover shall be fitted on each wheel except the spare. Vehicles with dual wheels, and class 2 vehicles (see 3.16.2.1) do not require hubcaps.

3.7 Electrical system and components.

3.7.1 Electrical system, (reference figure 5). The ambulance electrical system shall be equipped with, but not limited to the following: dual identical 12 volt batteries, generating, starting, lighting, ignition, visual and audible warning systems, specified electronics equipment, and devices including master consoles located in the cab and patient compartment, and other specified accessory wiring. The electrical systems and equipment shall comply with all applicable FMVSS including Federal Motor Carrier Safety Regulations (FMCSR), and shall also conform to all the applicable SAE recommended standards and practices whether or not specifically referenced in this document while complying with the subparagraphs herein. All electrical and electronic components shall be selected to minimize electrical loads thereby not exceeding the vehicle's generating system capacity. All electrical system components and wiring shall be readily accessible through access panels for checking and maintenance. All switches, indicators, and controls shall be located and installed in a manner that facilitates easy removal and servicing. All exterior housings of lamps, electronic devices, and fixtures shall be corrosion resistant, and weatherproofed.

Electrical fixtures attached to the sides of the ambulance below the 75 inch level shall be near flush mounted,not protrude more than two (2) inches, except for such items as spotlights, speakers, and ventilators. All electrical devices and equipment installed which produce RFI, shall include filters, suppressors, or shielding to prevent electromagnetic radiation and the resultant interference to radios and other electronic equipment. (see 3.7.12). Vehicles equipped with electronic engine controls shall be immune from interference caused by radio transmissions.

3.7.1.1 Warning indicators. The electrical system shall incorporate a warning light panel located in the driver's compartment. It shall provide indicator lights for showing: patient compartment door(s), (side and rear), are open (see 3.10.8), and when applicable which battery(s) are selected by the battery selector switching system (see 3.7.7). The "door open" warning light shall be red, flash, and have a raised lens approximately 1/2 inch in diameter, or equal area. The battery indicator lights shall be green with a raised lens approximately 1/2 inch in diameter, or equal area. Warning indicators shall be identified and marked per 3.7.11.

3.7.2 Wiring Installation. The ambulance body and accessory electrical equipment shall be served by circuit(s) separate and distinct from vehicle chassis circuits. All vehicle wiring shall be copper and conform to all the SAE J555 requirements, and have type GPT thermoplastic or better insulation conforming to SAE J1128. The wiring shall be color coded or permanently marked for identification with an easily read number and/or letter, routed in conduit or looms conforming to SAE J562 as applicable. All wiring shall be located in accessible, enclosed and protected locations, and kept at least six inches away from exhaust system components. Under no circumstances shall any wiring or electrical components terminate or pass through the oxygen storage compartment (3.11.3). All conduits, looms, and wiring shall be secured to the body or frame with insulated metal cable straps in order to prevent sagging and movement which results in chafing, pinching, snagging or any other damage. All apertures on the vehicle

shall be properly grommetted for passing wiring and conform to SAE J555. All items used for protecting or securing the wiring shall be appropriate for the specific application and be standard automotive, aircraft, marine or electronic hardware.

3.7.2.1 Wiring Criteria. All wiring devices, switches, outlets, etc., except circuit breakers, shall be rated to carry at least 125 percent of the maximum ampere load for which the circuit is protected.

Under no conditions shall wiring be used which is smaller than 20 gauge. A six inch service loop of wire or harness shall be provided at all electrical components, terminal and connection points. All splices and terminals provided shall comply with SAE J163, J561, or J928 as applicable. All wiring between the cab and module in type I and III ambulances shall be connected to a terminal strip(s) or block(s) near the point of entry to the patient module. All terminals shall be permanently numbered or coded, and the terminal strip(s) or block(s) shall be readily accessible for checking and service.

The ambulance electrical system shall incorporate a master circuit breaker panel with circuit breakers which comply with SAE J553, type I in each circuit. Additionally, one (1) 15 ampere circuit breaker shall be provided for future use. When "Type I" high current breakers are not commercially produced, protection for these circuits may be provided with other types of circuit breakers. All circuit breakers shall be securely mounted, easily removable, and readily accessible for inspection and service. All electrical and electronic components, switches, connectors, circuit breakers, lamps, and indicators, including the vehicle batteries, shall be marked with an easily read identification code number and/or letter. Complete, highly legible wiring diagrams, and schematics, including identification codes and parts list for the ambulance's standard and optional equipment furnished, shall be included in the service manual and be supplied with each ambulance in accordance with paragraph 6.8.

3.7.3 Ignition system. Spark ignition engines shall be furnished with the engine manufacturer's current standard ignition system and be supplied with two identical keys.

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

3.7.5 Horns. The chassis manufacturer's dual electric horns shall be furnished (see siren).

3.7.6 Electrical generating system (reference figure 5). Unless otherwise specified (see 6.2), the ambulance shall be equipped with a generating system rated at not less than 120 amperes at 14 volts with an underhood temperature of 200° F. As a minimum, the generating system shall be capable of supplying at its regulated voltage, at 200° F, the continuous electrical load which consists of the following electrical equipment and systems: ignition system, headlights (low beam), all FMVSS 108 lights, windshield wipers (low speed), cab air conditioning (at coldest setting with highest blower speed), radio in receiving mode, (or equal load, if not equipped), patient module dome lighting (in the high intensity setting), patient module air conditioning (at coldest setting with highest blower speed), emergency warning lighting system in the daytime "primary" mode (3.8.2), and 20 amp medical load or equal.

If additional continuous electrical devices or systems are desired (optional) and furnished such as additional warning lights, on board 115 VAC supply etc., these are permitted providing reserve or additional generating capacity is available or added.

The generating system shall supply the maximum electrical load, at the regulated voltage, 200°F underhood temperature and with an engine speed not exceeding 50 percent of the furnished engine's SAE net HP, rpm rating. The throttle control device specified in 3.7.6.1 shall control the engine rpm necessary to maintain the heating and air conditioning systems at full operating capacity, but in no event, at less rpm than necessary to maintain the generating system's required output when the vehicle is stationary. The 12 volt electrical system shall incorporate an ameter (see 3.7.6.2), and a voltmeter or voltage warning device (see 3.7.6.3), which are functionally connected as shown in figure 5. The final stage manufacturer/ supplier shall test each ambulance prior to delivery and provide to the purchaser a written certification (tag) indicating the amount of generating capacity remaining at the regulated voltage at 200°F, after

supplying the total electrical load as manufactured (including the purchaser options). Testing and tagging shall be in accordance with "AMD Standard 005, Ambulance Electrical System".

3.7.6.1 Engine high-idle speed control, automatic. Unless the chassis manufacturer's recommended engine idle speed, (when the vehicle is under stationary conditions) can sustain the ambulance's total continuous electrical load, and maximum heating/air condition output as manufactured (see 3.7.6), an engine high-idle speed control shall be provided, which automatically increases the engine (rpm) speed. The device shall be preset so that when activated, it will operate the engine at the appropriate rpm (see 3.7.6). The device shall operate only when switched on the "ON" position and the transmission is in "NEUTRAL" or "PARK". The device shall be designed to disengage when the operator depresses the service brake pedal, or the transmission is placed in gear, or when its ON/OFF switch is turned off.

3.7.6.2 Ammeter. The electrical system (see figure 5), shall incorporate a center scale ammeter which is capable of indicating a current of ± 150 amperes to or from (charging or discharging) the dual vehicle batteries. The ammeter shall incorporate an external shunt which does not exceed 150 millivolts at maximum current. The ammeter and shunt shall have a combined accuracy of ± 10 percent of the full scale reading. The meter shall be mounted in a location highly visible to the vehicle operator and shall be illuminated for night operation. The shunt shall be protected against physical damage, weather and road spray and shall be mounted in an easily accessible location which shall minimize the length of the power cables.

3.7.6.3 Voltmeter or voltage monitor. A voltmeter, illuminated for nighttime operation which constantly monitors the 12 volt electrical system, or a warning device which indicates abnormally high or low electrical system voltages shall be furnished. The device furnished must be mounted so it is clearly visible to the driver at all times.

3.7.7 Battery System. A dual 12 volt battery system with a labeled "battery selector device", shall be furnished. Unless otherwise specified (see 3.15.3, item 5), the identical batteries shall be either the high cycle life - no maintenance, or the low maintenance type. Performance ratings for each battery shall not be less than 450 cold cranking amps at $0^{o}F$, with at least 125 minutes reserve capacity. If due to space restrictions, there is inadequate room for the 450 CCA batteries the next smaller CCA battery will be acceptable, but in no event shall batteries be furnished with less than 375 CCA, with 115 minutes reserve capacity.

Battery ratings shall conform to SAE J537. Batteries shall be located in a ventilated area, sealed off from occupant compartments, and shall be readily accessible for servicing and removal. When batteries are mounted in the engine compartment, they shall be provided with an adequate heat shield and ventilation as safeguards against high underhood temperatures.

Unless the "Battery Selector" device is clearly visible to the driver in the seated position, green lights indicating which battery is in use (see 3.7.1.1) when the ignition switch is turned "ON" shall be furnished. All battery and selector device or switch wiring, for starting motor circuits shall meet or exceed the SAE J538 and SAE J541 requirements for "12 volt heavy-duty applications." The selector device shall be capable of selecting either battery separately or both batteries simultaneously. Additionally, the switch or device shall be capable or completely disconnecting both batteries. A diode isolator device (see 3.7.7.2 and figure 5), shall be installed which permits simultaneous charging of both vehicle batteries and prevents the removal of the battery load from the alternator when the battery selector switch or device is placed in the "OFF" position with the engine running. The electrical system shall include patient compartment outlets for 12 volt power (see 3.7.7.3) for medical equipment. A driver compartment console-mounted "module disconnect switch or device" (see 3.7.7.4), shall be provided which controls the equipment as defined in Figure 5.

3.7.7.1 Battery charger. When specified (see 3.15.3, item 7), a 12 VDC taper battery charger shall be provided. The charger shall be connected to the dual 12 volt battery system as shown in figure 5. The charger shall be capable of supplying a minimum of 10 amperes charging current, at a charger voltage of 14.0 to 15.0 volts. The charger shall be permanently mounted in the vehicle in a properly ventilated, and accessible location, and wired to the 115 VAC utility power as specified in 3.7.8 and figure 6. The charger shall include an automatic cut off that terminates charging when the batteries are fully charged.

3.7.7.2 Diode isolator. A diode isolator device shall be furnished (see figure 5), which incorporates (low voltage drop) "Schottky" diodes. The diodes shall be mounted on a suitable heatsink, be capable of continuously carrying at least 125 percent of the maximum charging current to the vehicle battery(s), and have an inverse voltage rating of at least 45 volts. The heatsink shall be located in a protected area and not exposed to the elements.

3.7.7.3 Internal 12 VDC power, (reference figure 5). The patient compartment shall be furnished with a 12 VDC, 20 ampere capacity, separately protected circuit, with two (2) outlet receptacles. This circuit shall also include a (low voltage drop) "Schottky" diode to isolate medical equipment batteries from any electrical loads that the remainder of the ambulance electrical system may impose. The Schottky diode shall be; heat-sink mounted, have an inverse voltage rating of at least 45 volts, and also be rated to carry the maximum short circuit current until the circuit breaker opens. The diode shall be physically located in an accessible location and be electrically connected between the circuit breaker and the "action wall" mounted receptacle. The receptacles shall be a military type connector of the following generic designation, MS3112E12-3S. The polarity of the connector shall be as follows: Pin A - +12V, Pin B - Ground, Pin C - not used. The receptacles shall be located on a vertical surface of the "action wall".

The mating plug attached to the medical equipment shall be an MS3116F12-3P. The polarity for the plug shall be the same as above. Two of these unwired plugs shall be furnished and tagged with polarity requirements and shall be connected to the receptacles. (NOTE: These military connectors are made by the following manufacturers: Bendix, Burndy, and Cannon and are widely available directly from most major industrial electronics distributors).

3.7.7.4 Master Module disconnect switch or device. This switch (see figure 5), shall be located on the driver's compartment console, be legibly marked, and rated to carry at least 125 percent of the circuit's maximum current.

3.7.8 115 volt AC utility power, (reference figure 6). The ambulance shall be furnished with a 2-wire plus ground 115 volt AC wiring system that is separate and distinct from the vehicle's 12 volt DC system(s). The 115 VAC electrical system and associated equipment shall comply with Article 551 of the National Electrical Code. This system is to be used for powering medical equipment, battery chargers, and when specified, vehicle battery charger, engine and battery heaters, and any other device(s) deemed necessary by the purchaser. The 115 volt system shall incorporate a ground fault interrupter (GFI) device and a 15 ampere circuit breaker which can be used as a master 115 volt disconnect switch.

When an on board 115 volt AC supply is specified (see 3.7.8.3), an automatic transfer switch shall be furnished which turns off this 115V supply (interlock) and disconnects its output when the 115V utility power is applied.

When the 12 VDC battery charger (see 3.15.3, item 7), and any 115V power plant heater(s) (see 3.15.3, item 15), are furnished, they shall be wired so that they can be energized only when the 115V utility power is applied. The 115V on board generating system shall not be utilized for ambulance interior lighting, such as dome and cot lights, etc.

3.7.8.1 Utility power connector. A 115 volt (male) plug (NEMA 5-15P), rated at 15 amps or more if required (similar to a Levitan 4937, Arrow-Hart 527WP or equal) with spring loaded cover assembly suitable for wet locations, shall be installed on the driver's side of the ambulance body in close proximity to driver's door. The connection shall be permanently labeled with the following: "This connection is for 110-125 volt AC, 60 Hz, 15 ampere supply". This receptacle shall energize the vehicle's internal 115 VAC circuit from an exterior power source (utility power). The supplier shall inform the user(s) with tag or written means that the utility power circuit supplying the ambulance's 115 VAC power should incorporate ground fault protection. A proper mating, weatherproof, 15 ampere, or more when required, female receptacle (NEMA 5-15R) shall also be furnished without cable and tagged specifying the size, type of wire necessary, and the polarity of the future hookup.

3.7.8.2 Electrical 115 VAC receptacles. The patient compartment shall be furnished with two (2), 2-wire plus ground duplex 115 VAC receptacles. Receptacles shall be near flush mounted with one (duplex) outlet located on the vertical primary patient action wall, and the other vertically located at the torso area of the secondary patient (squad bench). Both outlets shall be at least 12 inches from any oxygen outlet. An indicator shall be located within each 115 VAC receptacle as a line monitor indicating a live (hot) circuit. The receptacles shall be labeled with the following: "115 VAC".

3.7.8.3 Solid State Inverter, or Motor-Generator for on board 115 VAC power. When specified under 3.15.3, item 6, a DC to AC device shall be provided in conjunction with 3.7.8. The device furnished shall be capable of delivering at least 750 watts of AC power to a resistive load and maintain a frequency of 60 $\pm$ 4 Hz. The single phase output voltage shall not rise to more than 135 volts nor drop to less than 105 volts from no load to full load, at an 80 percent power factor, over the normal range of the DC input voltage. The device shall be capable of operating all types of AC loads including resistive and reactive (either inductive or capacitive) over the temperature range in 3.4.2. The installation shall include an "ON-OFF" switch to activate the device. This switch shall be located on the EMT's control panel, or cab console, have a red "ON" indicator, and be labeled with the following "115 VAC, 750 watts". A decal shall be provided near this switch which states that "When operating the AC system all unnecessary 12 volt DC electrical loads should be turned off."

3.7.9 Driver compartment controls. In addition to the normal USA vehicle left-hand drive controls and switches, the final stage ambulance manufacturer shall provide and locate within easy normal reach of the driver the specified controls and instruments. The battery selector (3.7.7) and master module disconnect device (see 3.7.7.4) shall be supplied with a handle or knob which feels different to the touch than the other switches, or be physically isolated from them.

3.7.10 Patient compartment controls. The specified patient compartment controls, switches, and instruments shall be panel mounted and located (unless otherwise specified) within normal reach to the immediate right of a seated EMT facing the rear of the patient compartment forward of the primary patient's head.

3.7.11 Marking of switches, indicators, and control devices. All switches, indicators, and control devices supplied by the end product manufacturer of the ambulance shall be clearly visible to the ambulance personnel. They shall be perceptively and permanently identified with at least 12 point letters for the noun or function and 1/8 inch for the remainder of the legend. The identifications shall be contrasting colors etched or engraved in plastic or metal, grouped according to function, mounted in illuminated or backlit panel(s) or console.

3.7.12 Electromagnetic radiation and suppression. Electrical components, electronic equipment, and devices used and installed on the ambulance, in addition to all subsystems (chassis, warning systems, etc.), shall be electromagnetic radiation suppressed, filtered, or shielded to prevent interference to radio and telemetry equipment aboard the vehicle and the surrounding area. The RFI of the completed ambulance shall not exceed the maximum limits in SAE J551.

3.8 Lighting, ambulance exterior, and interior.

3.8.1 Ambulance exterior lighting. The basic exterior ambulance lighting shall comply to FMVSS Std. No. 108, and the requirements herein, and include: amber front and rear directional signals and hazard warning lights (except on type II ambulance's rear signal lights if amber is not available from chassis manufacturer), front and rear side marker lights that flash with the directional signals, backup light(s)/ loading light(s), clearance lamps when applicable, ambulance emergency lights, 3.8.2, floodlights, 3.8.3, and spotlight(s) 3.8.4, (see figures 1, 2, and 3).

3.8.2 Ambulance emergency lighting. The emergency lighting system must provide the ambulance with 360 degrees of conspicuity for safety during its missions. The system must display highly perceptible and attention-getting signals that function in a modal system, and convey the message in the PRIMARY MODE - "Clear the Right-of-Way" and in the SECONDARY MODE - "Hazard-Vehicle Stopped on Right-of-Way". The system shall not impose an electrical load exceeding 40 amperes. Additional or auxiliary lights shall not be added that will modify, interfere with, detract, or mask, the integrity, intent, or functioning of the modal emergency lighting system as described herein. Any warning devices furnished in addition to the specified system shall be compensated for with reserve or additional generating capacity as determined during the AMD standard 005 test as required in 3.7.6.

The ambulance standard emergency warning light system shall contain ten (10) red lights and one (1) clear light. All warning lights shall be fixed (Stationary). The lights shall function in a dual mode system as shown in Table I, and meet the physical and photometric requirments of 3.8.2.1. All the upper body warning lights shall be identical and mounted at the extreme upper corner areas of the ambulance body below the horizontal roofline, with the exception of the single clear light which shall be mounted midway between the two front facing red upper corner lights (see figures 1, 2, and 3). Warning lights shall not be obstructed by an open door. The red "grill" lights shall be located at least 30 inches above the ground but below the bottom edge of the windshield, and be laterally separated by at least 24 inches. All warning lights including the grill lights shall be mounted to project their highest effective intensity beams on an axis parallel to the vehicle's longitudinal or lateral centerline axis.

3.8.2.1 Photometric and Physical Requirements. Each emergency light shall flash on/off 60 ± 5 FPM and have a minimum of 20 sq. in. of illuminated viewing area. The warning lights shall project a beam spread of at least 5 degrees up and 5 degrees down, and at least 20 degrees left and right of H-V. Each light shall produce a gradual gradient of effective intensities from the H-V to all the extreme test point coordinates as shown below. The effective intensities shall be determined in accordance with the Illumination Engineering Society's (IES) Guide for Calculating the Effective Intensity of Flashing Lights.

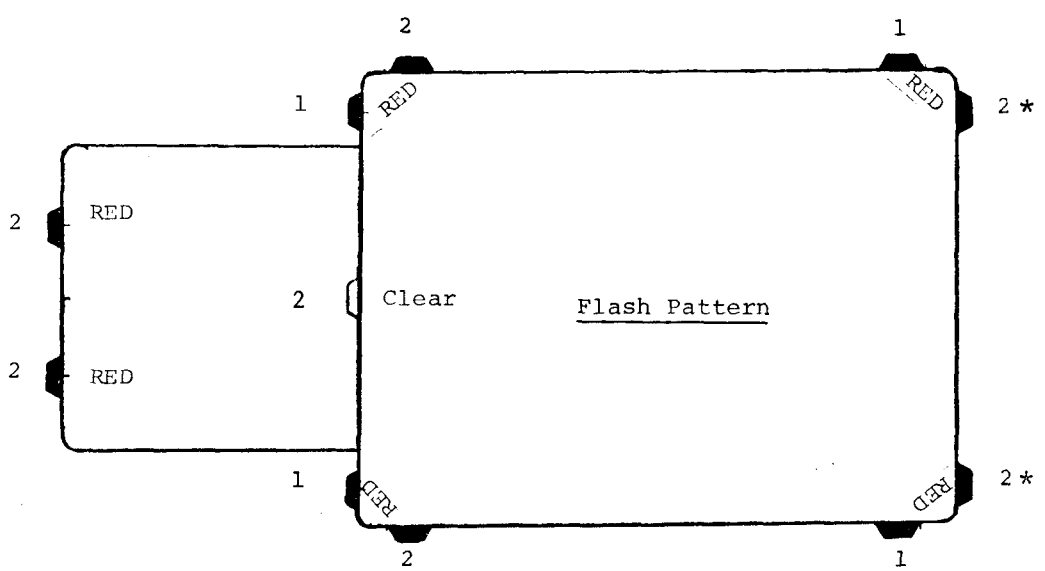
Minimum Effective Intensity (Candela)

Color / Condition	RED	CLEAR
Day	800 cd. @ H-V	3,000 cd. @ H-V
	100 cd. at all 5°V-20°H points	500 cd. at all 5°V-20°H points
Night	10-30% of above	

TABLE 1

MODAL EMERGENCY LIGHTING SYSTEM

Location & Color / Mode of Operation	Front corners- RED	Front Upper Center- CLEAR & Grill - RED	Rear Corners- RED	Front & Rear 4-Way Flashers AMBER
PRIMARY MODE "Clear the Right-of-Way"	ON	ON	ON	OFF
SECONDARY MODE "Hazard-Vehicle Stopped on Right-of-Way"	ON	OFF	ON	OPTIONAL
TERTIARY MODE ** "Vehicle in Hazardous location"	OFF	OFF	OFF	ON



1 - indicates lights flashing at the same time
2 - indicates lights flashing 180° out of phase with 1
*In secondary mode, upper rear lights may alternately flash
**The "Tertiary Mode" which uses the vehicles 4-way flashers (Directional Signals) should only be used while the vehicle is stationary.

3.8.2.2 Hardware, construction, switching arrangements. The emergency lighting system shall be comprised of components and devices that comply to the general requirements and tests of SAE J575g, J576d, and J551 as applicable for the unit. Warning lights shall be firmly fastened to reinforced body surfaces. All switches, connectors, and wiring shall be rated to carry a minimum of 125 percent of their maximum ampere load. The emergency light switches shall be wired and arranged to provide the warning light signal modes and combinations as specified. When incandescent lamps are used, the duty cycle of any one lamp shall not exceed 50 percent. All emergency light switches shall be labeled (see 3.7.11) and each Primary/Secondary mode switch shall have an amber indicator light to show the driver which mode is activated. Manual (3.20) shall include suggestive management instructions for the warning systems (3) modes as specified.

3.8.2.3 Tests, warning light system. The ambulance manufacturer shall measure and record the total current load of the emergency warning light system on the vehicle as manufactured, when operated in the mode which draws maximum current. This load current test shall be conducted during the "ambulance's electrical system test" (3.7.6 and AMD Std. 005). Additionally, the front "Primary Mode" warning lights shall be subjectively tested to determine if they are perceptable as warning lights. This test shall be conducted on a clear sunny day with the sun located at its zenith. At least four unbiased observers having normal vision shall view the ambulance from the minimum distance of one mile, at an elevation of 5 to 30 feet above the roadway. The majority of the observers shall determine if the lights are perceptable. The warning light system and related components and devices shall be tested, approved, and listed with the American Association of Motor Vehicle Administrators (AAMVA) for conformance to the requirements herein.

3.8.3 Flood and loading light (exterior). Flood and loading lights shall be not less than 75 inches above the ground and unobstructed by open doors. Floodlights shall be located on the left and right sides of the ambulance, and be firmly fastened to reinforced body surfaces below the roof line. The lamp(s) H-V shall be projected downward at an angle of 12 to 18 degrees from the horizontal plane, and the lighting on each side of the ambulance shall provide a minimum of 1500 beam candle power, and produce a trapezoidal light pattern equivalent to a 4419 sealed beam lamp. Floodlight switches shall be located on the cab console, and control each side independently. Loading light(s), shall provide a minimum of 500 candle power and shall illuminate the area surrounding the back loading door(s). The light(s) shall produce a light pattern equivalent to a 4406 sealed beam. Loading light(s) shall automatically be activated when rear door(s) are opened and may be incorporated with FMVSS backup lighting system.

3.8.4 Spotlight. A single 360° swivel, clear spotlight of not less than 75,000 candle power, mounted on the cab roof, over the windshield area (between, but clear of the speaker/warning light) convenient for the driver and assistant's use shall be furnished. Two pillar mounted spotlights of 75,000 candle power each may be substituted or specified.

3.8.5 Ambulance interior lighting. The basic interior ambulance lighting configuration shall be designed to minimize electrical loads and include: A driver compartment dome light, instrument panel lights, master switch panel and console light(s), and glove box light. Lighting shall be designed and located so that no glare is reflected into the drivers eyes or his line of vision from switch control panels or other areas that are illuminated while the vehicle is in motion. The patient compartment lighting 3.8.5.1 shall also include: stepwell light(s) on type I and III vehicles, and control panel lighting.

3.8.5.1 Patient compartment illumination. Normal white illumination (dome and EMT's switch panel lighting) in the patient compartment shall not be less than 15 foot candle intensity, measured along the centerline of the clear floor without any outside light. The primary cot shall be provided with 35 to 75 foot candles of illumination measured on at least 90 percent of the cots surface area. The lighting level(s) shall be controlled by the EMT with a switch(s) or fireproofed UL approved rheostat. Blue light(s) or lenses shall not be used. Patient compartment lights shall not be powered by the vehicle's 115 volt AC system if so equipped. The patient compartment normal dome lighting, loading lamp(s), and stepwell lamp(s) shall be automatically activated

when the patient compartment doors are opened. Interior lights shall be near flush mounted and not protrude more than 1.5 inches. The use of fluorescent lighting which operates on 12 volts, meets the above performance, and the interference requirements of paragraph 3.7.12, can be used in lieu of incandescent lighting. Fluorescent fixture(s) shall have a removable cover that positively locks in place. The fluorescent tube shall be positively locked in place to preclude loosening due to vehicle movement or vibration.

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 (types II and III) 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, 212, 301, and 302. Types II and III vehicles 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 3.9.8. All ambulance types shall be provided with a partition between the cab or driver's compartment and the patient's compartment (see 3.10.2 and 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 shall be 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.
c. Compartment ventilation, other than windows.
d. Key operated ignition switch.
e. Ammeter and voltmeter (see 3.7.6.2 and 3.7.6.3).
f. Fuel gage(s).
g. Oil pressure gage.
h. Engine temperature gage.
i. Speedometer with odometer.
j. Environmental controls (heater-defroster/air conditioner, etc.).
k. Seatbelts and driver's shoulder harness if available.
l. Dual outside mirrors (3.9.5).
m. Cab lighting and controls.
n. Tinted windshield.
o. Dual electric horn(s).
p. Throttle control(s)(see 3.7.6.1).

3.9.3 Cab compartment driver and assistant seat. The driver's compartment shall be furnished with atleast two individual bucket-type seats (driver and assistant) or bench style seating for three. 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 mechanisms 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, and shall not interfere with the ambulance personnel or patients ingress or egress of respective compartments.

3.9.5 Outside rearview mirrors. Unless otherwise specified (see 3.22), dual, below-eye level, firmly secured vibrationless rearview mirrors, having a combination wide angle mirror system shall be furnished. Mirrors shall have the largest usable reflective area practical for the designed ambulance, totaling at least 125 square inches per vehicle. All (four) mirror head (faces) shall be independently adjustable. Hardware and mirror heads shall be of polished metal.

3.9.6 Bumpers and steps. Chassis manufacturer's standard bumper shall be furnished in the front of the cab. The rear of the ambulance shall be furnished with a sturdy full-width rear vehicular and body bumper with step, secured to the vehicle's chassis-frame. The rear bumper and step shall be adequate to support a test weight of 500 pounds without flexing. A step shall be furnished at the back (loading) door opening, if the patient compartment floor is more than 18 inches above the ground. The step installation shall be equal distance ± two (2) inches between the ground and the floor. The bumper-step shall be designed to prevent the accumulation of mud, ice, or snow, and made of anti-skid open grating metal, (a folding style step if specified in 3.15.3, item 20). These steps shall not be located or exposed to the interior of the ambulance when the door(s) are closed. All necessary steps shall be at least the width of the door opening for which they are provided. The step(s) tread shall have a minimum depth of five (5) inches and a maximum depth of 10 inches.

3.9.6.1 Override front bumper. When specified (see 3.15.3, item 21), a high rise override front bumper shall be furnished to protect the vehicle radiator and air conditioning condenser. High rise bumper shall include two vertical members of not less than 1 1/4 inch nominal diameter solid steel stock, curved in at bottom and welded to brackets which are bolted to same points as standard front bumper. The vertical members shall be located in front of the standard front bumper and shall be rubber covered or cushioned with rubber for the full height. Riser overall height shall be approximately 23 inches. At least one horizontal structual crossmember of not less than 2 x 2 x 1/4 inch steel angle shall be welded approximately 5 inches below the top of the vertical members. This bumper shall be painted to match the vehicle exterior color or may be rubber or plastic coated with white colored material.

3.9.7 Fenders. Either the chassis manufacturer's standard fenders shall be used or ambulance (end product) manufacturers shall provide fenders or wheel housing (see 3.10.13) over all wheels and tires. Fender extension(s) over (above) dual rear tires are permitted on ambulance bodies to cover wheels, providing they are less than 8 inches wide, reinforced, secured, and may be painted black unless polished metal is used (see 3.4.11.2).

3.9.8 Engine hood. Engine hood and cowl shall be fitted to prevent precipitation, heat, odors, and noise from entering the interior of the cab and body. Cab compartment hood, types II and III 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, vinyl, or similar construction shall be provided between the cab body and the containerized modular body. Window in the cab or 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 3.10.2 and 3.10.14).

3.10 Ambulance body and patient area.

3.10.1 Body accommodations. The ambulance body proper and patient compartment shall be sufficient in size to transport occupants as specified in plan A 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 II. There shall be space around the patients to permit a technician to administer life support treatment to at least one patient during transit (see dimensional parameters 3.10.4).

3.10.2 Cab and body access between compartments, Type I. The ambulance cab and body bulkheads shall have an aligned window opening of at least 150 square inches for visual and voice check of conditions in the patient's compartment. The window opening shall be provided with an adjustable shatterproof glass treated or located in the bulk-head(s) to prevent interferring with the driver's night vision. (see 3.9.9 and 3.10.14).

3.10.3 Emergency Medical Technician (EMT) seating. The EMT shall be provided with space and a seat equipped with safety belt and a padded back and headrest, not less than 18 inches deep by 18 inches wide and 15 to 18 inches high measured to the top of cushion (par. 3.11.1.1). The EMT shall be seated at the head of the primary patient near the bulkhead or partition behind cab compartment, facing rearward (see 3.1.5 and 3.11.4). The space under the seat may be designed as a storage compartment, or utilized for other equipment such as compartment environmental outlets providing the air flow can be diverted away from the primary patient.

Table II. Ambulance Stretchers, Cots, and Litters

Stretchers, Cots, and Litters	Dimensions (In Inches) Length Minimum	Width Minimum	Bed Height Maximum
Style 1 -- Wheeled Cot (Elevating)	75	22	15[1]
Style 2 -- Wheeled Cot-Bench (Non-Elevating)	73	20	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 (Width 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.

3.10.4 Patient compartment interior dimensional parameters. The patient's compartment shall provide, but not be limted to, a minimum of 300 cubic feet of space, less 10 percent allowance for cabinets, while complying with the following:

Length: Length measured from the partition to the inside edge of the rear loading doors at the floor shall be at least 116 inches. 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 face of the backrest of the EMT seat to the forward edge of the style 1 cot.

Width: The width of the compartment after installation of the cabinets shall provide at least 12 inches and a maximum of 18 inches of clear aisle walkway between the secured primary cot and the squad bench or cot.

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

3.10.5 Body, general construction. The 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 including 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 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 the ambulance body meets the above criteria, the manufacturers, (fabricated, modified, or conversions), excluding the conventional cab, shall furnish for each body model (type) a certification that the ambulance body meets Static Load Test for Ambulance Body Structure, AMD Standard No. 001.

3.10.6 Ambulance body structure. All parts of the ambulance body and attachments 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 body, or framing to provide firm securing for installed equipment and devices (cabinets, benches, partition, cylinders, cot holder(s), etc.) shall be employed in the ambulance structure. Self-tapping (wood/metal) screws or nails shall not be used in assembling ambulance. When wood is the material, machine screws with nuts shall be used. On metal and plastic surfaces, nutsurts, plate, or clinch nuts, etc., shall be used. Vehicles furnished with fiberglass/plastic exterior roof panel shall have the center section reinforced with metal wire screening (see 3.14.3, for crash worthiness, and radio ground plane). Ambulance bodies with extended roof shall be permanately fastened to structual members of the body (welded, bolted, and sealed) to prevent separation in an accident. Drip rail(s) shall be provided over doors of type I and III or around the entire module unit, and have drain points at each corner. Body skirt(s) shall not extend more than 3 inches below the vehicle cab/body. On type I and III bodies when specified (see 3.15.3, -18)a minimum 1 x 2 inch protective rub rail on right and left sides located in the lowest third section of the body shall be provided. The body, roof, and panel joints shall be watertight. All openings between the chassis-body and occupant carrying compartments due to alteration or construction shall be sealed, including the bulkhead space between cab and body of type I and III (see 3.9.9)

3.10.7 Body mounting. Antisqueak material shall be used between body frame and attaching chassis. Reinforcements or filler blocks shall be used where mounting device(s) may deform frame flanges. Mounting devices shall be locked units which will minimize loosening, but which may be tightened if necessary. Types I and III ambulance bodies shall have at least four (4) high-strength 5/8 inch bolts, or equivalent, to attach the body brackets to the frame/chassis outriggers on each side, mounted so as to prevent any side movement of the body. Modular bodies shall not be welded to the frame at any point, but be interchangeable with other 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 rear for loading, (patient on cots) into 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 types I and III 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 44 inches in width for types I and III, and the manufacturer's standard for type II. Side hinged door(s) shall 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. Doors shall be designed for easy release, but prevent accidental opening with an interlocking system that functions even when doors are not completely closed. A "Door-Open" warning device shall signal (indicate in the cab) when doors are not closed (see 3.7.1.1). Each door shall have effective compression or overlapping seals to prevent leakage of 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 hardware. Door latches, hinges, and hardware finished 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 opening and closing; a 6 inch long or larger 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 shall be chrome plated, stainless steel, or anodized aluminum. Inside door handles shall be designed and placed so they cannot be operated (opening a door) when accidentally hit, or used as a grab handle. Type I and III ambulance body, side and rear door hardware shall be tested as installed to prove installation also meets or exceeds the requirements of FMVSS 206. Test shall comply with AMD Standard 002 - Body, door retention components tests.

3.10.10 Floor. Floor shall be at the lowest level permitted by the chassis/body, but not more than 33 inches from the ground, with the exception of class 2 vehicles. It shall be flat, except when rear entrance door slope is offered for lower entering, and shall be unencumbered in the door(s) access and work area. All floor areas shall withstand a distributed load of 150 pounds per square foot. Metal floors shall be reinforced to eliminate "oil canning" and insulated against outside heat and cold. The floor of type I and III patient's compartment shall be either (1) of sheet metal; minimum 20 gage, and reinforced with 1/2 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 sidewall 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 patient compartment or body (including space under the cabinets).

3.10.11 Floor coverings and color. Floor covering shall harmonize with the interior color and decor of the patient's compartment. The floor covering shall be seamless, one piece, no wax type linoleum, vinyl, or poured types of epoxy not less than 1/16 inch thick, permanently applied to the floor, cabinet to cabinet, running full length and width of the compartment's working area. The covering joints (corners, etc.) where the sidewalls and covering meet shall be sealed and bordered with corrosion resistant cove moulding, or the covering shall extend at least three (3) inches up the side walls. Cabinets at floor level shall be finished with floor covering material. Floor covering shall comply with FMVSS 302.

3.10.12 Stepwell (side door). Steps shall be provided the door openings if the floor is more than 18 inches above the ground. Stepwell, when applicable, shall be the enclosed two-step type. Height of the bottom step shall not exceed 18 + 2 inches in types I and III vehicles, and 22 inches in type II. Stepwells shall be lighted by interior lights and all step surfaces shall be covered or taped with antislip material.

3.10.13 Wheelhousings. Wheelhousings of type I and III vehicles shall include metal or plastic splash shields between the body wheelhousing and the wheel(s) (see 3.9.7.) extending over the top of the tires to the bottom of the body side skirting. Wheelhouse openings shall allow for easy tire removal and service. Chassis manufacturer's standard wheelhousings will be acceptable. Wheelhousings shall be undercoated or rustproofed.

3.10.14 Windows. Unless otherwise specified (see 3.15.3), the patient's compartment shall not have windows except the viewing panel in the partition or bulkhead(s) (see 3.10.15) and in the doors (see 3.10.8). Glazing shall comply to FMVSS 205.

3.10.15 Partition for Type II and III vehicles. A full height partition or bulkhead (with or without compartments) having roll bar characteristics and an opening with a door, shall be placed between the driver and patient's compartment. This partition shall be located directly behind the driver and companion seats when in

rearmost position. The partition shall be secured at the sides, ceiling and floor, by welding or, bolted to tapping plates. A partition opening at least 17 inches wide and 46 inches high shall provide an aisle between the compartments. The door shall have at least a 150 square inch viewing panel of safety glass in the center section at the driver's eye level. The door shall be securable with a self-latching device in the open and closed positions from the driver's side (see 3.10.2).

3.10.16 Insulation. The entire body, sides, ends, and roof of the patient's compartment shall be insulated to enhance the environmental criteria specified in 3.4.2 and 3.13, minimizing conduction of heat, cold, and external noise entering the vehicle interior. The insulation shall be a nonsettling type verminproof, mildewproof, fire retardant, and nonhygroscopic. Undercoated doors and floor may be considered insulated.

3.10.17 Interior surfaces. The interior of the body shall be free of all sharp projections. All hangers or supports for equipment and devices shall be mounted as flush as possible with the surrounding surface when not in use. Padding shall be placed at all head area obstructions which may prove dangerous to persons moving about in the patient compartment. Other exposed edges shall be broken with at least 1/8 inch radius or chamfer, and a 1/2 to 1 inch radius on exposed corners. The finish of the entire patient's compartment, including interiors of storage cabinets shall be impervious to soap and water, disinfectants, and mildew; be fire resistant; and comply to FMVSS 302. Interior body lining and cabinetry excluding the cab compartment (see 3.9), shall be reinforced metal panels or equivalent strength materials, woods coated with high quality plastics, or polyester sheets. Fiberglass panels shall be at least 3/16 inch thick and reinforced. The ceiling headlining may be of vinyl upholstery material. For interior colors see 3.16.2.

3.11 Storage compartment and facilitations.

3.11.1 Interior stowage accommodations. The interior of the patient compartment shall provide, 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. Enclosed compartments and spaces shall be located at, in, or on the partition, sidewalls, overhead, squad bench, technician seat, and doors. Compartment(s) under the 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	7
Linen supplies	4
Trash receptacle compartment	1
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 medical equipment and supplies. Location of medical supplies and equipment shall be dictated by their relative importance and ready accessibility to the Emergency Medical Technician (EMT). Priority shall be 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 at the head of the primary litter (action area) and when furnished, those for cardiac resuscitation, control of external hemorrhaging, administration of intravenous agents, and the monitoring of blood pressure shall also be readily available to the EMT at the side of the litter, action area. The trash receptacle compartment shall be designed to hold and accept trash, into a disposable plastic liner (provide 12 spare bags). The trash compartment shall be located near the EMT seat. Supplies, devices, tools, etc., shall be stored in enclosed compartments and drawers designed to accommodate the respective items. All life saving devices and equipment shall be stowed properly fastened in/on the action area or cabinets, or fastened to rail system(s) brackets when specified (item M1 of 3.15.4) etc., to prevent items from flying about the patient compartment while the vehicle is in motion or overturned.

3.11.2 Exterior storage accommodations. Unless otherwise specified (see 6.2), outside entered weatherproof storage compartments shall be provided in the ambulance's body for extrication, spare tire, oxygen, and miscellaneous equipment, with the exception of type II vehicles which may utilize applicable interior space. Exterior compartment doors and hardware shall be flush or near flush style construction. Hardware (hinges, locks, latches, etc.) shall be rust resistant. All exterior compartments shall have latches with locks and shall be keyed alike. All exterior compartments, except the long narrow backboard storage compartment, shall be automatically lighted when opened. When top and vertically hinged doors are furnished, they shall employ ratchet or spring loaded style hold open devices.

3.11.2.1 Extrication equipment and storage. The extrication equipment compartments, maximum of two, shall provide at least ten (10) cubic feet of storage accommodations. Small handtools shall be contained in a single pouch type carrying device. The following items and other miscellaneous extrication equipment shall be stored in the extrication storage compartment(s) and furnished if specified in 3.15.3, Item 17:

a. One wrench, 12" adjustable, open end
b. One screwdriver, 12" regular blade (slot)
c. One screwdriver, 12" Phillips type
d. One hacksaw with 12 wire (carbide) blades
e. One pliers, 10" vise grip
f. One hammer, 3 lb. 15" handle (engineer style)
g. One fire axe, butt, 36" handle
h. One crowbar, 51" pinch point
i. One wrecking bar, 24" combination tool
j. One bolt cutter, 36" jaw opening of 1 1/4" or greater
k. One portable hydraulic power jack and spreader tool, hand powered, minimum 4 ton
l. One shovel, pointed blade (folding type)
m. One double action tin snip, minimum 8"
n. Two ropes, manila, 50' x 3/4" diameter each
o. Three pairs gloves (gauntlets) leather
p. Three pairs goggles (clear eye protective)
q. One cold chisel, and one center punch 1/2" x 12"
r. One cold chisel, 1" x 12"
s. One seatbelt cutter
t. Two utility knives, curved blade
u. One weighted polypropylene rope, 100 ft., 1/2 inch diameter
v. One pair lineman's rubber gloves with leather shells
w. Two lights, portable, battery operated
x. One asbestos blanket (min. 6 x 6 ft.)
y. Two baling hooks
z. Three hardhats

aa. One glazier's tool
bb. Twelve hardwood shoring blocks, 2" x 4" x 10" with rope handles
cc. Four hardwood shoring blocks, 4" x 4" x 12" with rope handles
dd. Four hardwood shoring blocks, wedge shaped, with rope handles
ee. One come-along, 2 ton, chain type with hooks
ff. Two alloy steel rescue pull chains, 10 ft. minimum, with grab hooks and rings
gg. One air cutting gun kit, 250 psi, with cylinder and chisels
hh. One truck jack, hydraulic, 4 ton
ii. Two extrication straps, synthetic fabric, 9 feet, with quick release buckles
jj. One extrication rope loop sling, 1" manila, 6 foot circumference

3.11.3 Storage 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 shatterproof transparent sliding doors provided with a finger pull opening or recessed metal cups or equal. Storage compartments shall be divided into sections, shelves shall be adjustable, and drawers marine style slide, or tilt, and shall all be removable. Cabinet compartment doors and drawers, sliding or hinged shall automatically latch or be fitted with friction holding devices. Side cabinet shelves shall be no more than 12 inches in depth when located above the vehicle belt level. Storage compartments, cabinets, and support equipment area interior surfaces shall be finished in accordance with 3.10.17. Cabinets shall be firmly anchored(bolted or welded) to tapping plates of the body structure (3.10.6). Tops of the cabinets and shelves shall be bordered or surrounded by a lip of not less than 1/2 inch in height. Storage for the main oxygen cylinder (see 3.12.1) shall be accessible for replacement from an outside position. The oxygen compartment shall be provided with at least a nine (9) square inch louvered device located near or at the top of the compartment, permitting any leaking oxygen gas to dissipate/vent to the outside of the ambulance. Oxygen cylinder storage compartment shall not be utilized for storage of any equipment, and shall be free of electrical devices and wiring. Oxygen cylinder(s) shall be mounted with a minimum of 3 restraining devices, and its crashworthiness tested in accordance with AMD Standard 003 Oxygen Tank Retention System.

3.11.4 Squad bench, seats, and backrests. The squad bench (standard in floor plan A) shall support the style 3 folding stretcher or combination stretcher chair specified (see 3.10.1 and 3.11.5). Squad bench platform shall be not less than 22 inches wide, 72 inches long, and a height of 14 to 19 inches measured from the floor to the top of the padded seat. Squad bench shall be provided with stretcher post cups and wheel cups to prevent lateral movement of style 3, or the specified stretcher (3.15.4 item M14, or style 5), and provide underneath storage. All seats in the patient compartment shall be padded, at least 18 inches wide, and have the largest practical padded backrest (including style 2 wheeled cot bench when floor plan B is specified). Padding furnished shall be rubber or polyester urethane foam, in covered finish thickness of at least 2.5 inches for seats, and approximately 2 inches for head and backrests. Padding shall be covered with fire retardant (FMVSS 302), washable, nonabsorbent material. Squad bench or wheeled cot bench shall be provided with three (3) sets of safety belts which meet FMVSS 209 and 210 for seated patients (see 3.11.6), and may be used to restrain style 3 stretcher when positioned on the bench.

3.11.5 Stretchers, cots, and litters. Unless otherwise specified (see 6.2), the ambulance supplier shall provide the following: one sturdy, lightweight, all-level style 1 (Ferno Washington Model 30 or equivalent) cot for the primary patient, and a style 3 folding stretcher or a combination stretcher chair each with legs and two wheels, designed to permit a patient to be carried (or wheeled) on stairways and thru other narrow areas (see 3.11.5.1), or equivalent. When floor plan B arrangement is specified (see 1.2.1) a wheeled style 2 cot conforming to a Ferno Washington Model 17 Cot Bench or equivalent shall be provided for the secondary patient. Stretchers, cots, and litters shall conform to the dimensions of table II (see 3.10.3), length and width measurements shall be taken at the metal framing excluding joint fittings. Wheeled cots shall include foot and head pulls and a polyester foam mattress at least 3 inches thick, covered with vinyl coated nylon fabric conforming to FMVSS 302 or equivalent.

3.11.5.1 Combination stretcher chair. When specified in 3.15.4, code M14, a Ferno Washington Model 107B Combination Stretcher Chair or equivalent shall be furnished in lieu of the stored stairway stretcher specified in 3.11.5. The stretcher shall conform to the dimensions of style 3, of table II (see 3.10.3) Stretcher shall have fixed posts and wheels, folding squad handles at foot-end, and straps, and convert to wheelchair, stair chair and stretcher.

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. Seatbelts shall have retractor devices for all seat positions in the vehicle including the squad bench.

3.11.7 Litter fasteners and anchorages. A crash stable side or center mounting style fastener of the quick release type shall secure the style 1 wheeled cot to the ambulance body. An alike fastener shall be provided when the style 2 wheeled cot-bench is specified. Style 4 and 5 litters need not be provided with fastening devices unless specified. The installed cot fastener device(s) for wheeled cots shall be tested to comply with AMD Standard 004, Litter Retention System.

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. Restraining 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 for intravernous fluid containers. Two near flush style, IV ceiling holders or hooks with strapping device to tie and control IV bags/bottles shall be provided. The ceiling holders shall be located, one at the head of the primary patient and one at the head of the secondary patient's cot (squad bench). When specified in 3.15.4, code M2, a rigid telescoping IV pole and holder, the detachable type, with a 52 inch minimum height, when extended, shall be provided the style 1 cot, mounted on the left side at the front end of the cot.

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 6.7) of medical oxygen. Unless otherwise specified, the main oxygen (O_2) supply shall be provided by using a single tank ("M" size cylinder). The ambulance consignee will provide and install the oxygen cylinder(s) at the time the vehicle is placed in service. Cylinder(s) when furnished shall conform to Federal Specification RR-C-901, DOT Specification 3AA2015, and MS-39226-8. The oxygen cylinder(s) shall be located in a separate equipment-free storage compartment (see 3.11.3). The cylinder controls shall be accessible from inside the vehicle. The pressure gauge shall be visible from the EMT's seat or squad bench. Cylinder changing wrench(es) shall be furnished, chained, and clipped 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 preset to 50 ± 10 PSI line pressure, nonferrous piping and low pressure hose approved and suitable for medical oxygen at the flow rate specified in 3.12.1.1. 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 a self-sealing duplex oxygen outlet station for the primary patient, and shall be located vertically on the action wall recessed area. One oxygen wall outlet for the primary patient shall be equipped with a plug-in flowmeter, humidifier, and delivery tube located within 35 inches, measured from the center of the primary patient's head when in the normal position. The second oxygen outlet will be used for quick disconnect plug-in devices not requiring humidification. Outlet shall be adequately marked and identified (see 3.7.11) and not interfere with the suction outlet. The entire system shall be leak tested (see 4.4.6).

3.12.1.1 Oxygen pressure regulator and flowmeter. The medical oxygen pressure reducing and regulating valve with inlet filter at the cylinder shall have an excess pressure relief valve set at 200 PSI maximum, a gauge range of 0 to 2,500 PSI (4,000 PSI tested) having the gauge scale graduated in not more than 100 PSI increments. The regulator shall be easy to connect and preset at 50 ± 10 PSI line pressure permitting a maximum flow rate of 300 liters per minute (LPM) with a full tank and a minimum 100 LPM at 150 PSI (empty). The furnished oxygen flowmeter (flow selector) shall have a calibrated gauge or dial with range of 0 to 15 liters per minute (LPM) in calibrated increments. Flowmeter shall withstand a minimum 200 PSI inlet pressure without failure or damage. Flowmeter(s) shall be accurately readable from a distance of seven (7) feet in normal ambulance lighting. Both the oxygen regulator and flowmeter devices furnished shall have simple and dependable attaching fittings, be electrically conductive from inlets to outlets (UL rated hose), and incorporate inlet filters. These devices shall maintain accurate readings and calibrations under ambulance operation, and unaffected by temperature conditions of 3.4.2. All settings, calibrations, safety valve, limiters for pressure, and flowmeters shall maintain accuracy to within ± 10 percent. Servicing, parts and instructional manuals shall be provided and included in 3.20. Each device shall be color coded green (for U.S.A.) and also be approved for use, by recognized national medical associations and societies. The oxygen regulator and flowmeter shall each be permanently identified with the manufacturer's name, model number, calibrated conditions, and specific markings including warning/caution information.

Manufacturers shall certify that all the devices furnished (3.12 to 3.12.4) conform to this specification and are approved by an independent medical testing laboratory.

3.12.2 Portable oxygen unit. Space shall be provided for an approved portable oxygen unit. It shall be located near a patient compartment door, and reachable from outside the ambulance without reentering. When specified (code M15) in 3.15.4, a portable oxygen (0_2) unit of at least 300 liters ("D" size cylinder, see 6.7) shall have a yoke, protected pressure gauge, flowmeter (not gravity dependent), delivery tube and oxygen mask(s). The unit shall be capable of delivering an oxygen flow of at least 15 liters per minute. A full spare cylinder of oxygen for this unit shall be furnished and stored. Portable cylinder(s) and kit shall be secured with a quick release securing fitting. Oxygen masks furnished (with or without bags) shall be semi-open, valveless, transparent, easy to clean and decontaminate in sizes for adults, children, and infants. If disposable masks aresupplied, six of each, for adults, children, and infants shall be provided.

3.12.2.1 Squeeze bag-valve-mask system, portable for artificial ventilating. When specified (code M6) in 3.15.4, a portable artificial ventilation squeeze bag-valve-mask system shall be furnished. The bag-valve-mask system shall consist of, and comply to the following:

a. Two self-refilling bags without sponge rubber inside. One bag of about 1,700 cc volume for adults and one bag of about 700 cc, but not more than 750 cc, volume for infants and small children. There shall not be a pop-off valve on either bag.

b. Three transparent facemasks, each with an air-filled or contoured resilient cuff, one each in adult, child, and infant sizes.

c. Standard 15 mm/22 mm fittings.

d. A true nonbreathing valve.

e. A system for delivery of 80-100 percent oxygen through an ancillary oxygen inlet at the back of the bag or through an oxygen reservoir. The system shall be capable of accepting up to 15 liters/min. of oxygen without valve jam.

3.12.2.2 Oxygen-powered, manually triggered inflation device. When specified (code M18) in 3.15.4, one oxygen-powered, manually triggered inflation device shall be provided. This device shall meet the following criteria:

a. Provide an instantaneous flow rate of at least 100 liters per minute for adults.

b. Provide 100 percent oxygen.

c. Shall be equipped with a safety valve having a release pressure setting of 50 cm H_2O for adults, and 30 cm H_2O for infants and children.

3.12.3 Suction aspirator, primary patient. Unless otherwise specified (see 6.2), an engine vacuum operated and/or electrically power complete suction aspirator system shall be installed to provide for the primary patient. All components, electrical, pressure and/or vacuum, other lines and accessories shall be securely mounted yet readily accessible. The engine vacuum type aspirator system shall be connected via a single plug-in self-sealing valve leading from a reservoir chamber having a volume of not less than 575 cubic inches, which is connected to the engine vacuum manifold through a check valve. The electric type aspirator system shall be electrically connected per figure 5. The patient compartment suction line connector from the engine vacuum system shall be permanently mounted female inlet recepticle labeled "Suction", located vertically in the action area but clear of other equipment and controls. Two (2) corresponding male suction line fittings or one suction yoke shall be provided for the suction regulator valve connection. The aspirator system shall provide a free air flow of at least 20 LPM and achieve a minimum of 300mm Hg (11.811 inches) vacuum within four seconds after the suction tube is clamped closed. The rate of flow and pressure of the engine vacuum aspirator system shall be attainable continuously during the entire normal range of vehicle operation (i.e., accelerating, decelerating, at rest, climbing hills, etc.). A vacuum control and a shutoff valve, or combination thereof, shall be provided to adjust vacuum levels, and to discontinue aspiration instantly. A vacuum indicator gauge of 3 inches ($\pm$ 1/2 inch) in diameter with numerical markers at least every 100 mm Hg and a total range of 0 to 760 mm Hg shall be provided. The collection bottle or bag, and spare stored near by, shall be nonbreakable and transparent with a minimum 1,000 ml capacity. The following accessories shall be furnished: one suction rinsing water bottle, one semirigid pharyngeal suction tip (nonmetallic), one "Y" connector, and a ten foot (three meter) length of transparent or translucent nonkinking suction tubing. To assure high air flows and free passage of aspirate, minimum inside diameter for the suction tubing and tubing connectors shall be at least 1/4 inch (diameter). The selection of suctioning catheters shall be provided by the user. An operator's manual containing clearly illustrated instructions for operation, cleaning, assembly/disassembly, decontamination/sterilization and troubleshooting as well as a parts list, etc., shall be provided. The apparatus shall be clearly marked with manufacturer's name, address, and any applicable standards ratings (see 3.20).

3.12.4 Portable suction aspirator. When specified (code M16) in 3.15.4, a portable suction aspirator having the following characteristics shall be provided. The unit shall be capable of operation from the vehicle's 12 Volt DC electrical system. It shall also operate from an integral battery supply which is rechargeable and which will allow the unit to meet the air flow and suction requirements of this paragraph for at least 20 minutes of continuous operation. Gas powered portable suction aspirators are acceptable if they meet the performance requirements specified herein. The portable suction aspirator shall provide an air flow of at least 20 liters per minute at the end of the suction tube, and a vacuum of at least 300 mm Hg to be reached within 4 seconds after the tube is clamped. The portable aspirator shall be provided with the following accessories: one suction rinsing water bottle, one nonmetallic pharyngeal suction tip, spare suction tip and catheters, and one Y-connector. The suction tubing shall be translucent and shall not kink or collapse under high suction. The inside diameter of the tubing shall be at least 1/4 inch. The internal battery supply shall be rechargeable from the vehicle's 12 Volt DC electrical system and from 115 Volts AC. The 115 V AC charging system need not be integral to the portable suction unit. The unit shall be provided with applicable power cords and plugs (MS 3116F12-3P applies). The polarity of the DC plug shall be as follows: Pin A - +12 Volts, Pin B - ground, Pin C - not used.

3.13 Environmental: climatic, and noise parameters.

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 a 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 independent control of environment within each compartment. All ambulances shall be equipped with heating, ventilating, and air conditioning systems that can be made to collectively operate using recirculated air and ambient air and shall be capable of maintaining interior temperature within the established comfort zone of 68°F to 78°F when operated between 0° to 95°F ambient. The air systems shall be high volume capacity with low velocity delivery for minimum draft circulation while providing a positive pressure within each closed compartment. (positive pressure may be attained through the fresh air ventilation system either apart from, or as an integral part of either the air conditioning system, or in combination with any or all three). Environmental system components shall be readily accessible for servicing at the installed location(s). The driver and patient compartment environments shall not in any way be dependent upon each other.

3.13.2 Driver's compartment environmental equipment. The driver's compartment shall be furnished with a hot water, fresh air, high capacity, heavy-duty heater, with dual defrosters, and dehumidifying air condition 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 be heated, ventilated, and air conditioned complying with the criteria specified herein. Unless a reheat-recycle type conditioning system is furnished, the heater provided shall be a high capacity hot water type of not less than 25,000 BTU rated in accordance with SAE J638.

3.13.4 Heating criteria. The heating system(s) shall have sufficient capacity to simultaneously raise the temperature at midpoints in each compartment to a dry bulb temperature of 75°F., within 30 minutes. The temperature gradient within either compartment space (floor to ceiling) shall not exceed 10°F. Test conditions: the ambulance (with doors open) shall be cold soaked for 3 hours in an ambient temperature of 0°F., then the engine started, and allowed to run at high-idle setting (3.7.6), while the transmission is in park or neutral. Three verification readings shall be made (start, middle, and final) at nine equally spaced test thermocouples in the patient compartment, and three in the cab compartment. Heating equipment may be in (air) recirculating mode and all compartment openings, including partition doors/windows shall be closed. Heater(s) furnished shall comply to applicable Motor Carrier Safety Regulation 393.77.

3.13.5 Air conditioning criteria. The air conditioning system(s) shall have sufficient capacity to simultaneously lower the temperature at midpoint in each compartment to a dry bulb temperature of 75°F., within 20 minutes. The temperature gradient within either compartment space (floor to ceiling) shall not exceed 10°F. Test conditions: the ambulance (with doors open) shall be heat soaked for 3 hours in an ambient temperature of 95°F., then the engine started, and allowed to run at high-idle setting (3.7.6), while the transmission is in park or neutral, with test verification and therocouples placement as specified in 3.13.4. Air conditioning equipment may be in air recirculating mode and all compartment openings including partition doors/windows shall be closed. Air conditioning system and components shall comply with established practices and standards of International Mobile Air Conditioning Association, Inc. (IMACA) and SAE J639.

3.13.6 Ventilation criteria. Ventilation system(s) of the driver and patient compartments shall provide a complete change of ambient air within each compartment every two minutes with the vehicle static. 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. The patient compartment 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 ventilation in either compartment, without affecting the other compartment. Switches and controls shall be located in EMT's panel and/or remote panel and identified for function and operating position (see 3.7.9 through 3.7.11). Switches and control components shall exceed in capacity the power dissipation requirements for the motors used (see 3.7.2). Blower or fan system shall produce at least three speeds (excluding stop). Shutoff valve(s) for the hot water heating system shall be provided to allow servicing and shutoff. Air systems shall have adjustable louvers to direct the flow of air.

3.13.8 Patient compartment sound level criteria. All ambulances shall comply with the Sound Level Test Code for Ambulance Patient Compartment Interiors, AMD Standard 006. Unless otherwise specified by Federal or State regulations, the decibel level shall not exceed the following for the year the ambulance is manufactured:

From:	January 1, 1981	90dB (A)
	January 1, 1983	88dB (A)
	January 1, 1986	86dB (A)

3.14 Communications.

3.14.1 Communication equipment. Ambulance and consoles shall be configured for two-way radio(s) (mobile and walkie-talkie), intercom, public address, electronic siren, and telemetry system(s). These systems when specified herein or purchaser furnished shall be installed, and ready to use. Switches and controls shall be panel mounted and conform to 3.7.9 to 3.7.11. Communications equipment should be consistent with the applicable FCC rules and statewide and local area FMS radio communications plan so as to meet the needs of the routine ambulance service area and the statewide and interstate needs for ambulance interoperability for disaster response.

3.14.2 Radio (mobile) provisions. All ambulances shall be provided with sufficient ventilated space for a modern two-way radio, convenience features (antenna openings, ground plate, terminal wiring, and panels (see 3.14.3), required for the installation and servicing of mobile radios. Unless otherwise specified (see 6.2), the consignee will locally install mobile radio unit(s) or shall provide any additional data, equipment, and a coordinator to insure compartibility of specified systems.

3.14.3 Antenna, cable, and mounting. The contractor shall provide each ambulance a ground plane and opening, and coaxial lead-in wire from the ventilated radio storage compartment to a temporarily sealed antenna port. The antenna and/or mounting shall be on the centerline of the patient compartment roof. An antenna port shall be provided in the patient's compartment directly under the mounting area. The port shall provide at least a 4 x 4 inch opening (if not zipper type), and marked as specified in 3.7.11. All fiberglass roofs shall be equipped with at least a 40 x 40 inch metal ground plane molded into the roof (see 3.10.6). Ducts and snorkel shall be provided to pull cable from front to rear control head when applicable. Unless otherwise specified, the cable (lead-in) shall be a labeled RG/58U or equal. Approximately 18 inches of extra cable shall be provided at the antenna base (port), and at least 3 feet at/in the radio compartment, provided with a PL-259 connector soldered to the end of the cable. Antenna when furnished shall meet the applicable requirements of EIA Standard RS 329, Part II.

3.14.4 Two-way (mobile) radio equipment. When specified (see 6.2), a solid state (no tubes) mobile two-way radio shall be furnished with all normal accessories. This radio shall meet the requirements of EIA Standards RS152B (transmitters), RS204A (receivers), RS329, Part II (mobile antenna) and, if applicable, RS220 (continuous tone

coded squelch systems) and RS374 (selective signaling). The transmitter power output shall be *(as specified) watts minimum. Microphones shall be provided for transmitting at both the driver's position and in the patient's compartment. Receiver audio power output shall be *(as specified) watts minimum. Selectable speaker outputs, singularly and in combination shall be provided at the driver's position, patient's compartment, and through the public address system. Radio interference suppression (see 3.7.12).

*Power to be specified (see 6.2), shall be consistent with 3.14.1.

3.14.5 Intercom system. When specified (in 3.15.3, Item 4) solid state intercom equipment shall be provided between the driver and patient compartments. The driver shall have the capability to place the patient compartment in stand-by "talk" mode and to control any necessary talk/listen switching. The intercom system shall be independent of the two-way radio equipment, or in conjunction with the radio, providing they don't interfere with each others transmissions. Cab compartment intercom shall be mounted in accordance with 3.7.9 and patient compartment intercom in accordance with 3.7.10, and comply to 3.7.11.

3.14.6 Siren - public address system. Unless otherwise specified (see 6.2), in order to meet other state or local regulations, a combination electronic siren with integral public address system and other upgrading features including radio amplification capability shall be provided. Speaker(s) shall be installed outside the vehicle. The microphone shall be a noise cancelling type. The siren's control functions and related characteristic sound patterns shall consist of at least manual, wail and yelp. Hi-Lo (European) sound patterns or other applicable sound(s) may be specified or furnished. The system shall provide plug-in connections and connecting cables, having remote control capability from the passenger seat, and driver's horn ring (siren/horn switch) and all other necessary hardware for the siren/public address operation. The public address amplifier shall be independent of the two-way radio, except that a common microphone and control housing group may be employed.

The siren shall be capable of producing a continuous warning sound at a minimum level of 120 dB A-weighted, at 3m (10 feet) on axis with 13.6 volts input, at a fundamental frequency in the range of 500 to 2,000 H_z maximum in both wail and yelp modes.

In voice (P.A.) operation, the unclipped sine wave output shall be at least 40 watts RMS on one speaker, and 60 watts RMS with a two speaker system. The frequency response shall be from 300 to 3,000 H_z $\pm$ 3dB, when measured from 1,000 H_z reference. Total harmonic distortion shall not exceed 10 percent over the specified frequency range.

In addition, the electronic siren furnished shall comply to all the other requirements included in the State of California Vehicle Code Section 27002, Title 13, Article 8, latest issue for Class A sirens. The electronic siren shall be tested, approved, and listed with the American Association of Motor Vehicle Administrators (AAMVA).

3.15 Additional systems, equipment, accessories, and supplies.

3.15.1 Additional and optional equipment. When specified, the additional or optional system(s), equipment, accessories, and supplies (selection follows) shall be in addition to the standard ambulance component systems and devices specified herein. These shall be selected by the purchaser to meet the user's needs. (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 specifically described shall be not less in quality, strength, performance, and service than those normally provided by the most reputable manufacturers.

3.15.2 Standard mandatory miscellaneous equipment. Unless otherwise precluded elsewhere in this specification or contract, each ambulance shall be equipped with, but not limited to the following:

a. Fire extinguisher: Two (2), ABC dry chemical, multipurpose (Halon, CO_2) minimum 5 lb. unit in a quick-release bracket, one mounted in the driver/cab section or body reachable from outside; and one, in the patient compartment.

b. "No Smoking Oxygen Equipped" signs; conspicuously placed in the cab and patient compartment.

c. Overhead grab rail; minimum 60 inches long, maximum 4 inch depth, on the ceiling over the primary patient.

d. Backup alert alarm; audible warning device activated when the vehicle is shifted into and/or moving in reverse.

3.15.3 Optional equipment. When specified (see 6.2), the ambulance shall be equipped with, but not limited to the following:

1. Additional fuel tank (total minimum of 30 gallon capacity) per 3.6.4.4.

2. Tachograph; 90 mph, with 24-hour chart, with warning light and siren recording.

3. Intercom; a visible amber, red, and green light intercommunication system from the EMT to the driver shall be provided.

4. Intercom; voice intercommunication system between driver and technician compartments as per paragraph 3.14.5.

5. Batteries, 2-12VDC, heavy-duty "high cycle life", maintenance free automotive type per 3.7.7. Similar to Delco, Gould, or equal.

6. 115VAC on board electric power supply, Inverter or Motor-Generator (select one) per 3.7.8.3.

7. 12VDC Battery Charger on board per 3.7.7.1.

8. High intensity cot light; with flexible or adjustable shaft located near head of primary cot.

9. Patient fan; located near primary cot, minimum 250 CFM rating 12, VDC.

10. Rear step storage compartment for Type I and III. (not available with item 1).

11. Window; clear, right side patient compartment minimum 430 square inches.

12. Drapes; fire retardant cloth drapes for each window of patient compartment except partition, installed on polished metal drapery hardware and rod(s).

13. Drug compartment; security compartment located near primary patient with hidden hinges, door with key lock, minimum size 20" x 12"W x 18"H.

14. Mud guard; to protect lower front end of body (for Type I and III).

15. Power plant heaters; minimum -30°F. startability per 3.6.3.2.1 for severely cold areas only.

16. High altitude operations; engine adjustments and/or emission control(s), and test if applicable per 3.6.4.3.

17. Extrication equipment as specified in 3.11.2.1. (This equipment shall normally be carried on the ambulance unless it is routinely accompanied by a rescue vehicle (select and detail all items wanted).

18. Body rub rails; for Types I and III, as specified in 3.10.6.

19. Automatic transmission heavy-duty oil cooler, additional unit (for very hot areas only), per 3.6.5.2.1.

20. Folding style step; at ambulance body rear loading doors, per 3.9.6.

21. Front bumper override, grill, and radiator protection, per 3.9.6.1.

22. Emergency Safety Kit; in sturdy metal carrying case containing:

    3 Bidirectional reflective triangles (approved FMVSS 125).
    6 Fusees minimum 15 minutes each with holders.
    2 sets of chassis circuit electrical system spare fuses.

3.15.4 Medical, surgical, and biomedical equipment. When specified (see 6.2), the ambulance shall be equipped with the following:

M1 - Rail system; a medical device(s) attaching aluminum guiderail, with quick release mechanisms, fastened securely in the action area at the side of the primary cot. Rail length 60 to 90 inches long. Medical devices shall be rail mounted, and 3 spare devices supplied.

M2 - IV telescoping pole for primary cot (see 3.11.9)

M3 - Stop clock; manual wound, with separate holder.

M4 - Suction jar for patient aspiration with (20) disposable inserts or spare bottle with holder.

M5 - Sphygmomanometer; with compression bag, cuff, stethoscope, inflating bulb and mounting.

M6 - Squeeze bag-valve-mask system, portable, for aritficial ventilation (see 3.12.2.1).

M7 - Humidifier and oxygen flowmeter; with holder (in addition to 3.12.1).

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M8 - Pulse and EKG tachometers or combination with mode select switch for pulse and EKG rate, battery operated and 12 VDC, pickup (sensor), visual and audible type; with holder.

M9 - A hinged, half-ring lower-extremity splint with a minimum ring size of 9 inches and minimum overall length of 43 inches.

M10 - Emergency medical jump kit; (specify contents) in dust and moisture proof steel case.

M11 - Scoop stretcher.

M12 - Backboards; wood or aluminum, long minimum size 72 x 18 inches, short minimum size 32 x 18 inches with straps.

M13 - Build-A-Board; The Ferno-Washington Model 69 or equal.

M14 - Combination stretcher, in lieu of folding stretcher (see 3.11.5.1).

M15 - Oxygen; portable unit (see 3.12.2).

M16 - Suction aspirator; portable, battery or gas powered (see 3.12.4), select one.

M17 - Mast, compartmentized individually inflatable sections, pneumatic trouser kit (complete with carrying case).

M18 - Oxygen-powered, manually triggered inflation device (see 3.12.2.2).

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 Color, paint, and finish. The exterior color of the ambulance shall be basically white in combination with a solid uninterrupted orange stripe and blue lettering and emblems. The exterior finish shall be an acrylic composition or polyurethane paint. The final stage manufacturer's painted components color coats shall have a film not less than 1.25 mils. thick and a minimum total thickness of 4 mils., including preservatives. 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 but may exclude the front of the hood panel. No other design is permitted. (The orange stripe may be edged/pin-stripped in black or blue). This solid (single) 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, pinholes, or other irregularities of surface. Exterior finish paint shall not be required on the underbody and inside surface of the body skirting.

3.16.2.1 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 specified Orange and Blue in American National Standard Z53.1-1974, Safety Color Code for Marking Physical Hazards. They shall comply with the tolerances expressed in terms of Munsel hue, value (lightness), and chroma (saturation).

(Color tolerance charts containing the color standards and tolerances for Ambulance Orange and Ambulance Blue will be available from the Research and Special Programs Administration, Materials Transportation Bureau, Information Service Division (DMT-43), 400 7th Street, SW, Washington, DC 20590 for $5.50.

3.16.3 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 and not more than 1/8 inch rust or blister creepage from the scored lines.

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-300, type I, class 1 or 3 reflectivity 1. The reflective color used shall be blue (color a), and white (color i) when applicable. The emblems and markings shall be of the type, size, color, and location as follows:

A. Front markings

a. The word "AMBULANCE" in block, blue letters, not less than 4 inches high, shall be mirror image, centered above the grill, on the orange or white background.

b. Block type blue, "Star of Life" conforming to figure 4 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, alongside or under the "Star of Life" on each side and rear of the vehicle body.

b. A block type blue "Star of Life" conforming to figure 4 (size C), of not less than 16 inches, on the right and left side panels. The "Star of Life" emblems size B, shall be provided on each rear door window glass, or on rear door panels.

c. All additional lettering and markings (required by the purchaser) shall be below the orange stripe (white area).

C. Top markings

a. Block type painted or tape, blue "Star of Life" conforming to figure 4 (may be without the white Staff of Aesculapius), of not less than 32 inches, (size D) shall be provided on the ambulance rooftop.

3.17 Undercoating. Ambulance shall be undercoated in accordance with MIL-STD-1223 unless rustproofed (see 3.18).

3.18 Rustproofing. When specified (see 6.2), ambulance shall be rustproofed in accordance with MIL-STD-1223.

3.19 Markings, data plates, warranty notice, etc. Unless otherwise specified, final stage manufacturer's caution plates and identification plates shall be conspicuously installed for all equipment, etc., furnished requiring such notices (see 3.7.11).

Other than the manufacturer's trademark(s) names, no other identification than that authoritatively specified shall be shown on exterior of the vehicle. The ambulance/vehicle manufacturer's "Star of Life" certification shall be provided on a placard or label as shown below, permanently afixed and easily visible in the ambulance oxygen compartment, (see 4.3).

MFG BY	DATE OF MANUFACTURE MO. YR.
ADDRESS CITY STATE ZIP	
This Ambulance conforms to Federal Specification KKK-A-1822 in effect on the date of manufacture shown above.	
AMBULANCE IDENTIFICATION NUMBER	(vehicle's VIN)
TYPE - CLASS-Floor plan Serial NO.	
CURB WT	PAY LOAD LB. MAX. / GROSS WT. MAX.
	CERTIFIED "STAR OF LIFE" AMBULANCE Made in U.S.A.

All ambulances shall also be furnished a decal or sticker providing at least the following information: contract number; purchaser order number; date of delivery, month, and year; and the warranty time, in months and miles (GSA Form 1398). Apply this data to the right or left front door lock face or door jam after final inspection and acceptance by the purchaser. As cited by the procuring activity for the appropriate military service, identification markings, data plates, and warranty notice shall be provided conforming with MIL-STD-1223.

3.20 Manuals and handbook of instructions. The supplier shall furnish with each ambulance, at the time of ambulance's acceptance, one (1) copy of the reference handbook as specified in 6.8 and herein. This reference handbook shall provide instructions for the operation, care, and repair for all ambulance related accessory, component equipment, and system(s) furnished as part of the emergency medical care vehicle. This handbook shall also contain all installation instructions, drawings, schematics wiring diagrams, illustrations, and safety precautions to insure proper management, operation and maintenance. The chassis manufacturer's applicable repair manual and parts book shall be furnished only when specified (see 6.2).

3.21 Predelivery inspection and servicing. The supplier prior to acceptance and inspection of the ambulance(s) shall service and inspect each vehicle in accordance with the chassis manufacturer's approved predelivery form, and the ambulance manufacturer's predelivery (test, inspection, and road test) form. A signed copy of these forms (check sheets) shall be furnished with the vehicle (see 6.8). Servicing shall comply to ambient temperatures and conditions applicable with the route of transport to the consignee's ultimate destination (see 5.1). Servicing shall include all tanks full of fuel; checking to determine satisfactory and complete operation of all mechanical and electrical features, equipment and systems; elimination of rattles, noises, and squeaks; cleaning the interior and exterior. Thus the vehicle shall be delivered ready to use.

3.22 Special requirements. Purchaser specify (see 6.2) which mandatory equipment item(s) are not required and to be deleted if the ambulance being purchased is a replacement vehicle, and such item(s) will be transferred to replacement ambulance. State unusual operating conditions, miscellaneous items, permissible exceptions, marking, etc., not specified herein. If in conflict with the manufacturer's standards and options, those specified shall take precedence. Contractor shall comply to the requirements of paragraph 6.3.

3.22.1 Overseas vehicle requirements. When specified (see 6.2), the following equipment changes, items, devices, and adjustments to systems shall be furnished:

a. Left dip headlights (as used on right-hand drive vehicles) adjusted for driving on the left side of the road (prior to shipment).

b. Speedometer-odometer, calibrated in kilometers.

c. Defogging fan. If heater-defroster is deleted or not furnished in driver compartment, fan shall be mounted on the dashboard convenient to the driver.

d. Tube type tires.

3.22.2 Export vehicle safety, emissions, and fuel requirements. Unless otherwise specified (see 6.2) export vehicle(s) shall conform to applicable safety standards of U.S.A. Vehicles exported to countries marketing only leaded gasoline fuel shall be capable of accepting (refueling nozzles), and operating on leaded gasoline. Vehicle modifications needed for leaded fuel operation shall be made prior to shipment. Vehicle(s) being offered/supplied with catalytic converters shall be identified in each bid.

3.22.3 Tiedown points. When specified (see 6.2), hard points (tow hooks, bumpers, axles, or other component points) suitable for use as tiedown points for the vehicle shall be identified. Identification of the points shall be provided by stenciling instructions and applying data plates to the vehicle or by supplementary instructions included with each copy of the owner's-operator's manual. Each identified tiedown or hard point shall be capable of withstanding its proportionate share of the GVW.

3.22.3.1 Liftpoints. When specified (see 6.2), a minimum of four hard points for use as liftpoints shall be identified. Identification of the points shall be provided by stenciling instructions and applying data plates to the vehicle or by supplementary instructions included with each copy of the owner's-operator's manual. Each identified hard point shall withstand without permanent deformation, a working load equal to its proportionate share of the GVW and shall have an ultimate strength of at least 1.5 times the GVW. In addition, slinging provisions shall be located so that:

a. Attached sling legs shall converge over the center of gravity of the vehicle when at its GVW.

b. The attached sling apex does not exceed a height of 24 feet above the lowest extremity of the equipment when suspended with each sling leg at a 45 degree maximum true angle.

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 without the approval of the contracting officer. 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 not show any evidence of poor workmanship.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection and tests. The contract/supplier is responsible for the performance of all inspections and test requirements specified herein.

The supplier may use his own or any other facilities suitable for the pre-delivery and acceptance inspections unless disapproved by the purchaser. The purchaser reserves the right to perform any of the inspections and tests set forth in the specification where such inspections are deemed necessary to assure supplies and service conform to the specification and contract. The contractor shall provide the purchaser's inspection representatives with instruments and all such assistance as they may find necessary.

4.1.1 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 of the ambulance(s) until conformance to specification criteria has been demonstrated.

4.2 Classification of inspection (for purchaser's acceptance). To specify (see 6.2) the purchasers should select either or both of the following methods of inspections:

1. Source inspection (see 4.2.1).

2. Destination examination (see 4.2.2).

4.2.1 Source inspection. Ambulance(s) shall be inspected upon completion, by the purchaser prior to shipment from manufacturer's factory or assembly plant and may consist of the following:

a. Workmanship inspection (see 3.23).

b. Quality conformance inspection (see 4.2.3).

c. First production ambulance inspection (see 4.2.5).

4.2.2 Destination examination. When specified, the contracted ambulance shall be examined at the destination. The vehicle(s) shall be visually examined to determine compliance to the contract requirements and the quality conformance inspection of 4.2.3. Vehicle component chassis failures and other minor defects may be accepted subject to correction by the contractor/manufacturer of those points.

4.2.3 Quality conformance inspection. Quality conformance inspection applies to all ambulance(s) offered for acceptance under the contract. Quality conformance inspection shall consist of (a) through (d) as follows:

a. Workmanship inspection (see 3.23).

b. Operational checks (see 4.2.4).

c. Water spray test (see 4.4.5).

d. Examine ambulance handbook (see 3.20).

4.2.4 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 highway 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.

4.2.5 First production ambulance inspection. When specified (see 6.2), the first production ambulance of each type and class specified under contract shall be inspected. This first ambulance 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 to the contract. The ambulance shall be inspected by the contractor at his plant under the direction and in the presence of purchaser's representative(s). Inspections shall be conducted during normal week day working hours. The cost of inspections, examination, all tests, and vehicle support, exclusive of personal expenses incurred by participating purchaser's representatives shall be borne by the contractor. Acceptance of the first production vehicle shall not consitute a waiver by the purchaser of his rights under the provisions of the contract.

4.2.6 Inspection failure of ambulance(s). Failure of a production ambulance to have the certifications required or successfully complete the examinations and tests shall be cause for nonacceptance of any of the contract quantity, until deficiencies and evidence of the corrective action preclude recurrence of similar deficiencies. Failure of the vehicle to successfully complete inspection shall not consitute an excusable delay in meeting scheduled deliveries.

4.2.7 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.

4.3 "Star of Life" certification requirements.

4.3.1 Qualifying provisions. The manufacturer/supplier is obligated, effective January 1, 1981 to certify to the Government/purchasers that the Ambulance bearing the "Star of Life", its components, and equipment meet or exceed all the requirements and tests set forth in this specification. The certification, and "Star of Life" label (3.19), verify that the ambulance conforms to this specification on the date of manufacture. Compliance for a "Star of Life" label is defined as certification backed by confirmed verifications of inspections and tests. The verifications shall be in possession of the issuer and presented if and when challenged. Also, for the benefit of purchaser's procuring activity evaluation and review, prior to or with each proposed bid (solicitation), the bidder/supplier shall provide and forward representative material of their "Star of Life" ambulance(s). This material shall include: a letter with certifying statement; general specification data, exterior and interior pictures, dimensional drawings/data, etc., and other information as requested.

4.3.2 Documentation for "Star of Life" Certification. The ambulance manufacturer shall compile complete certified documentation of verifications for all the tests required under 4.4 conforming to 4.3.4 and 4.3.6 in a booklet similar to that described in paragraph 6.8, for each type and class ambulance intended to be marketed to the Emergency Medical Care industry as a "Star of Life" ambulance.

4.3.4 Criteria of certifications. The testing and inspection(s) requiring certification shall be performed by either an independent testing facility or the ambulance manufacturer's own testing facility. In-plant tests shall be supervised by a staff Professional Engineer, or consulting registered Professional Engineer. The individual certifications will remain valid so long as they are applicable to the vehicle model, component(s) and equipment offered as tested under this specification, and are furnished without alternations, for 5 years, then shall be recertified. Certifications that appear on the vehicle need not be resubmitted (i.e., Department of Transportation, DOT; Environmental Protection Agency, EPA; etc.). Certification(s) will be acceptable in lieu of actual verification test during inspections (4.2) providing supporting verifying data complying to 4.3.6 is on file for examination. Certification from chassis manufacturer, and individual equipment manufacturers are acceptable providing they are not part of a system(s) or altered and in accordance with 4.3.5. Individual components and equipment products, type certifications, are acceptable.

4.3.5 Certification letter format. Certification letters submitted for the ambulance model, components, and equipment being certified shall contain the following information: on supplier's letterhead stationery: to whom certifying, date, units or items manufacturer and address, date product tested, model number and specification data, applicable specification references and test requirements, summary of the test report, a certifying statement, and official signature.

4.3.6 Certification verification data reports. The testing facility, (see 4.3.4) for each certification, shall supply supportive verification data and information on letterhead stationery, for whom tested, report date, name of sample product, or device, manufacturer's address, serial and model number(s), specification referral and amendment number(s), and test requirement(s), test facilities used and location, test equipment used, test procedure, test results, verifying test data, photographs, test conclusion(s), witness(es), and authorized signature.

4.4 Tests.

4.4.1 Test criteria. The ambulance shall be prepared for operation in accordance with chassis manufacturer's recommendations, and 3.21. The ambulance shall be manned and loaded when applicable, to simulate the maximum payload required for the type, class and plan being tested. Road tests and test course(s) shall be documented with pictures and route map. Test room(s) designed and equipped to simulate ambient temperature environments shall be used to perform tests.

4.4.2 Performance tests. The following ambulance items, systems and equipment shall be inspected, tested, and verified for conformance to the specification:

a. Ambulance physical dimensions (see 3.4.11 through 3.4.11.6 and 3.10 to 3.11.4).

b. Vehicle weight distribution (see 4.4.3).

c. Road test, and performance tests (see 4.4.4).

d. Exterior mounted devices tested for temperature conditions (see 3.4.2).

e. Cooling system (see 3.6.4.5).

f. Electrical systems and components, inspect and verify compliance (see 3.7 to 3.8.5.1).

g. Electrical generating system, (see 3.7.6 through 3.7.6.3).

h. Electromagnetic radiation test (see 3.7.12).

i. Warning light and siren system(s) (see 3.8.2 to 3.8.2.3, and 3.14.6).

j. Tests of Ambulance Body Structure (see 3.10.5 and 3.10.9).

k. Patient compartment interior surfaces, FMVSS 302 (see 3.10.17).

l. Oxygen system and tests (see 3.11.3, 3.12.1, and 3.12.1.1).

m. Litter fastener and anchorage test (see 3.11.7).

n. Suction aspiration system test (see 3.12.3 and 3.12.4.).

o. Environmental systems tests (see 3.13.1 to 3.13.7, and 3.6.3.2).

p. Patient compartment sound level test (see 3.13.8).

q. Painting, color and marking (see 3.16 to 3.16.4).

r. Manuals and handbook (see 3.20 and 6.8).

4.4.3 Vehicle weights. The 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 3.5.6. 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.

4.4.4 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 55 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. Class 2 vehicles shall demonstrate cross-country operation in 4-wheel drive for an additional 20 miles. Ambulances 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 subjected to the water spray test (see 4.4.5). Road test may be performed at any ambient temperature.

4.4.4.1 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.

4.4.5 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 (see 4.2.3) 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.

4.4.6 Oxygen system tests. The installed medical oxygen piping and outlet system (see 3.12.1) shall be leak tested at 150 psig pressure, for a time period of four hours. The system shall be tested with dry air or 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.

5. PREPARATION FOR DELIVERY

5.1 Preparation. Unless otherwise specified (see 6.2), 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 of specification. The intended use of this specification is to procure a certified a "Star of Life" ambulance.

6.1.1 Federal specification coverage. This Federal specification does not include all the varieties of medical services vehicles commercially available as may be indicated by the title of the document. This specification covers only the ambulance's approved to display the "Star of Life" symbols and purchased, to provide ambulance services, under contract, and funded by the Federal and State Governments of the United States.

6.1.2 Precautions and observations. Purchasers should read the entire document before requisitioning an ambulance, in order to be knowledgeable of just what equipment is standard, and which options need to be excised. Due to the variety of ambulance equipment or features, some options may be incompatible with the model desired. (Reference chassis and ambulance manufacturer's data books).

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

6.2 Ordering data. Purchasers should prepare their procurement document in the following sequence, select the preferred options, and provide the necessary information requested:

(a) Title, number, and date of this specification and amendment number, if any.

(b) Quantity, type, and class ambulance required (see 1.2.1) and chassis brand if desired. If type III, specify if a dismountable modular style body is desired.

(c) Patient compartment floor plan (plan A is standard); specify if plan B is desired (see 3.1.5).

(d) Engine power unit (gasoline type standard); specify 6 or 8 cylinder as desired, or diesel engine if available (see 3.6.3 to 3.6.3.4).

(e) Air pollution controls; cite where ambulance will operate, State and county, and/or if it is for export, name country (see 3.6.4.3 and 3.22.2).

(f) Drive train and transmission, (automatic standard for all models) if 4 x 4, class 2; specify if requirements are other than that specified. Check manufacturer's data (see 3.6.5 thru 3.6.5.9).

(g) Wheels; specify if single rear wheels are specifically desired, if type I (see 3.6.7). Dual rears standard on all but type II ambulance.

(h) Tires (highway tread is standard for all models). Mud and snow, or all purpose type tires may be desirable on 4 x 4 vehicle. Specify radial tires, if desired. (See 3.6.8 to 3.6.12).

(i) Electrical generating system (suppliers are required to provide adequate generating capacity in ambulance's as manufactured); if reserve capacity is desired for owner installed electrical devices beyond that already provided, specify minimum "ampere" needed (see 3.7.6).

(j) Warning lights, (red and clear lights are U.S.A. Federal standard); specify other color(s) only if required by State or local regulations. No additional warning lights should be necessary (see 3.8, thru 3.8.2.3).

(k) Interior and exterior storage accommodations; specify any specific requirement (see 3.11.1 to 3.11.4).

(l) Stretchers, cots, and litters; specify deletion of, or any upgrading features preferred (see 3.11.5 to 3.11.7).

(m) Suction aspirator system, select engine vacuum and/or electrically powered type (see 3.12.3 to 3.12.4).

(n) Communication equipment, two-way radio, siren, telemetry modulator (local purchase of radio equipment and installations is recommended); specify if contractor is to furnish the radio(s), and cite brand(s) acceptable, power output, frequencies needed, etc. Give complete details and provide a coordinator name, address, and telephone number (see 3.14 to 3.14.6).

(o) Additional systems, equipment, accessories, and supplies (see 3.15 thru 3.15.4), cite additional parameters and details where and when necessary:

1. Select optional (vehicle) equipment desired, 1 thru 22 (see 3.15.3).

2. Select medical (ambulance) equipment desired, M1 thru M18 (see 3.15.4).

(p) Rustproofing, if required (undercoating is standard, see 3.18).

(q) Manuals and handbooks; state if chassis manufacturer's complete repair manual and/or parts book(s) are required (see 3.20).

(r) Special requirements; state any other additions and permitted changes or deletions in the specification (see 3.22).

(s) Overseas vehicle requirements; select (a) thru (d) above (see 3.22.1 thru 3.22.3.1), include tiedown point and liftpoint requirements only if absolutely necessary.

(t) Quality assurance provisions, specify classification of inspection desired (see 4 thru 4.2.7).

1. Source inspection (see 4.2.1) or

2. Destination examination (see 4.2.2).

(u) First production ambulance inspection; state if required (see 4.2.5).

(v) Preparation for delivery, specify if different (see 5.1). State mode of delivery preferred.

(w) Procurement requirements; (see 6.3) specify other purchaser's contractual requirements.

6.3 Procurement requirements. Unless otherwise specified (see 6.2) in the invitation for bids, contract, or orders, the following are contractual requirements (see 6.4 thru 6.6), except in those instances where it is determined (by the purchaser) that inclusion thereof would not be to the best interests of the Government, or purchaser.

6.4 Warranty.

6.4.1 Warranty coverage. The contractor shall warrant the vehicle and furnished equipment against parts failure or malfunction due to design, construction or installation errors, defective workmanship, and missing or incorrect parts (exceptions, see 6.4.4) for a minimum period of 12 months, and 15 months for vehicles outside the contiguous (48) United States and District of Columbia from date of acceptance*, or 12,000 miles of operation, exclusive of any authorized accommulated driveway mileage, whichever occurs first. However, if the contractor received from any supplier or subcontractor additional warranty on the whole or any component of the vehicle, in the form of time and/or mileage, including any pro rata arrangements, or the contractor generally extends to his commercial customers a greater or extended warranty coverage, the Government/purchaser shall receive corresponding warranty benefits.

*The warranty begins when the Government/purchaser accepts the vehicle from the contractor FOB point of origin/destination (see 3.19).

6.4.2 Domestic use. When vehicles are used within the 50 States of the United States, the District of Columbia, Puerto Rico, and the Virgin Islands, the warranty shall include the furnishing, without cost to the Government/purchaser (FOB contractor's nearest dealer or branch to vehicle's location or station) new parts and assemblies to replace any that failed or malfunctioned within the warranty period. In addition, when the Government/purchaser elects to have the work performed at the contractor's plant, branch, dealer, or with the contractor's approval, (i) to correct the supplies itself or (ii) to have them corrected by a commercial garage facility, the cost of the labor involved in the replacement of the failed or malfunctioned parts or assemblies shall be borne by the contractor.

6.4.3 Foreign use. Unless otherwise specified, when vehicles are used outside the 50 States of the United States, the District of Columbia, Puerto Rico, and the Virgin Islands, the warranty shall include the furnishing of new parts or assemblies to replace any returned to the contractor which failed or malfunctioned within the warranty period. The replacement parts or assemblies shall be delivered by the contractor to the port of embarkation in the United States designated by the purchaser. The contractor shall not be required to bear the cost of the labor involved in correcting defects in vehicles operated in foreign countries.

6.4.4 Warranty exceptions. Unless within the additional coverage under 6.4.1, the following items are considered normal maintenance and repair for which the contractor need not assume liability for reimbursing the Government/purchaser regardless of the vehicle age or mileage.

a. Abuse, negligence, or unapproved alteration of original parts.

b. Damage from accidents.

c. Standard brake and clutch adjustments.

d. General tightening, headlamp adjustments.

e. Wheel alignment or tire balancing.

f. Tires, batteries, medical supplies and equipment, and radio(s) (if warranted by their manufacturers).

g. Miscellaneous expense such as fuel, towing, telephone, travel, lodging, or loss of personal property.

6.4.5 Warranty extension. In addition to the warranty provisions specified, the following shall also apply:

a. The ambulance chassis, chassis components (power train, etc.) and applicable body and cab shall be warranted and implemented in accordance with the original chassis manufacturer's standard warranty.

b. For vehicle(s) located within a country which has branch, dealer, or approved contractor service facilities, the cost of labor, parts and materials involved in correcting warranted defects shall be borne by the contractor. (see 6.4.3).

c. If action to effect repairs under warranty (except item a, chassis above) is not initiated within seven (7) working days by a dealer or supplier and completed within a reasonable length of time, or if the contractor does not have repair facilities in the city or county in which the vehicle operates, and in the event of emergency or dire need for the vehicle, the Government/purchaser reserves the right to make such repair, and be reimbursed by the contractor as follows:

If work is performed at a Government/purchaser facility, at the rate of $18.00 per hour for labor based on the manufacturer's flat rate time schedule, and full cost of expenditures for parts and material; or actual labor time and materials, for repairs of nonschedule operations, or when warranty services are performed at a commercial facility because no contractor facility is available, the new cost of the correction will be billed to the contractor.

6.5 Repair parts and service. As a continuous operation of the vehicle 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.

6.6 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.

6.7 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	3,000
Capacity, flow @3 to 10# (minutes)	40	325
Capacity (cubic feet)	13	106
Weight, empty (pounds)	13	75
Weight, full (pounds)	14	83

6.8 Reference Handbook. The handbook and all the material referenced in this specification (see 3.20) for the model ambulance furnished shall be provided in an 8 1/2 x 11 inch, 3-ring, hard cover, looseleaf binder, inscribed with the complete address and telephone number of the manufacturer, and shall contain the following:

1. Table of contents.
2. Copy of supplier's invoice/date of delivery including chassis.
3. Manufacturer's "Star of Life" certification of compliance statement.
4. Ambulance manufacturer's illustrative, pictorial literature, and a copy of predelivery inspection/test form signed by inspector.
5. Complete specification KKK-A-1822A and any amendments including purchaser's specifications and modifications.
6. Conditions of sale and contract (unless otherwise specified).
7. Shipping policy and papers.
8. List of Ambulance Manufacturer's Service Points (see 6.5).
9. Copy of chassis manufacturer's warranty and owner manual.
10. Final stage manufacturer's components and equipment information (hardware, fixture, etc.) including supplier's part numbers.
11. Complete wiring diagrams and schematics (3.7.2).
12. Final stage manufacturer's operating and servicing instructions for the entire ambulance, electrical system(s) of the ambulance, components, devices, and equipment aboard, etc., including each equipment manufacturer's data.

All contents of the handbook that cannot be punched with three holes shall be secured in plastic leaves.

6.9 Changes and amendments. When a using agency considers that this specification requires revision, a written request for change or additions to the document supported by adequate justification shall be sent to the General Services Administration, Federal Supply Service, Automotive and Tools Division (FREA), Washington, DC 20406, for appropriate action. The agency will be informed of action taken. New and revised information regarding this specification will be issued from time to time under an amendment to the Federal Specification. These amendments are identified by the same number and title as the document and are on green paper. Amendments should be retained until such time as the entire document is revised.

Military Coordination Activity:
Army - AT

ACTIVITIES:

Air Force - 99
Army - AT-EL
Navy - YD-MC

Custodian & Preparing Activity:
GSA-FSS(FREA)

CIVIL AGENCY ACTIVITIES:

USDA - APHIS
Interior - BIA
State Dept. - AID
DOT - NHTSA-EMS
DOE
HEW-EMS
VA-DM-S
DC Government

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Orders for this publication are to be placed with the General Services Administration acting as agent for the Superintendent of Documents, See Section 2 of this specification to obtain extra copies and other documents referenced herein.

FOR VEHICLES OF 80 OR MORE INCHES OVERALL WIDTH

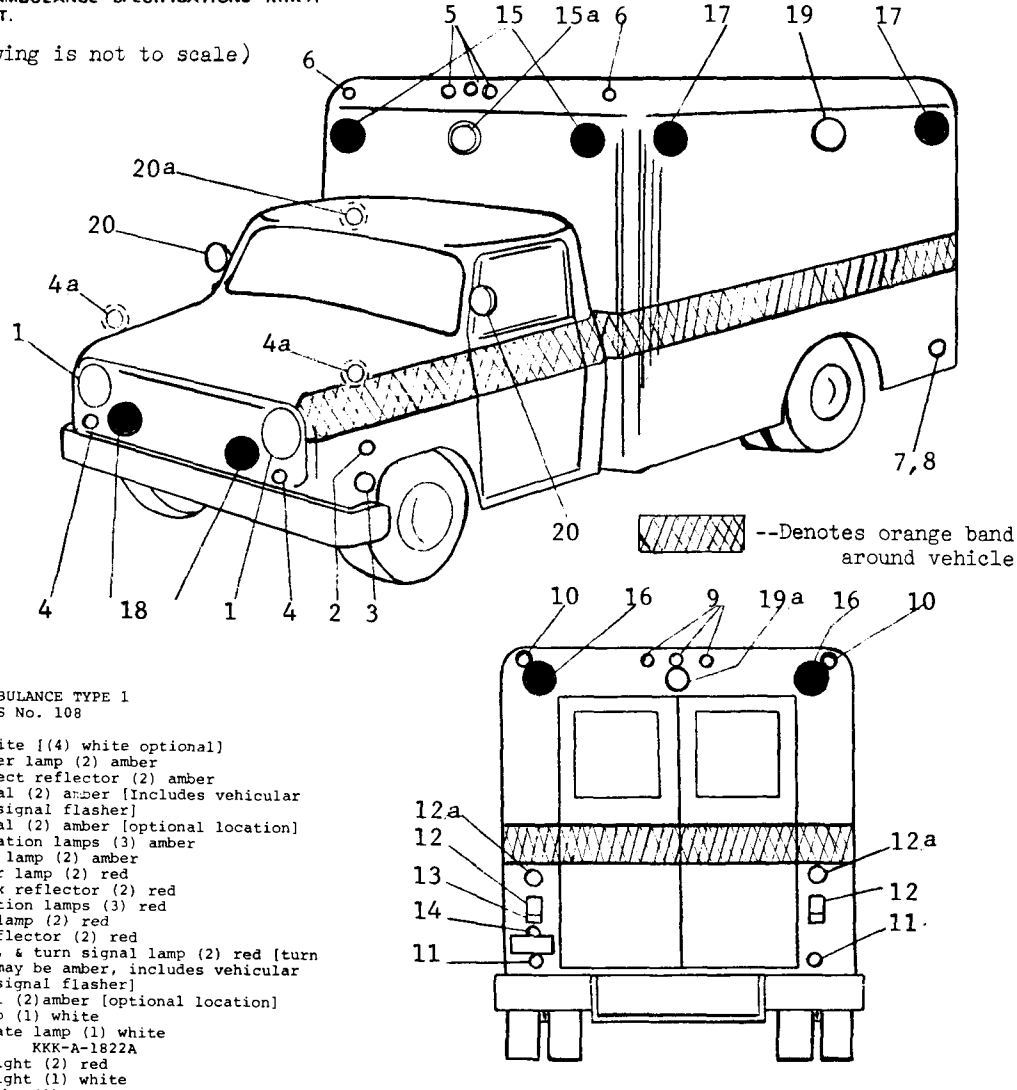
RECOMMENDED LAMP AND REFLECTOR LOCATIONS
IN ACCORDANCE WITH THE
FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 108
AND FEDERAL AMBULANCE SPECIFICATIONS KKK-A-1822

TYPE I

NOTE

LAMPS AND REFLECTORS MAY BE MOUNTED AT OTHER PRACTICABLE LOCATIONS PROVIDED LOCATION AND VISIBILITY REQUIREMENTS OF FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 108 AND FEDERAL AMBULANCE SPECIFICATIONS KKK-A-1822 ARE MET.

(Drawing is not to scale)



LEGEND AMBULANCE TYPE 1
FMVSS No. 108

1. Headlamp (2) white [(4) white optional]
*2. Front side marker lamp (2) amber
3. Front side reflect reflector (2) amber
4. Front turn signal (2) amber [Includes vehicular hazard warning signal flasher]
4a. Front turn signal (2) amber [optional location]
5. Front identification lamps (3) amber
6. Front clearance lamp (2) amber
*7. Rear side marker lamp (2) red
8. Rear side reflex reflector (2) red
9. Rear identification lamps (3) red
10. Rear clearance lamp (2) red
11. Rear reflect reflector (2) red
12. Rear stop, tail, & turn signal lamp (2) red [turn signal section may be amber, includes vehicular hazard warning signal flasher]
12a. Rear turn signal (2)amber [optional location]
13. Rear backup lamp (1) white
14. Rear license plate lamp (1) white

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15. Front warning light (2) red
15a. Front warning light (1) white
16. Rear warning light (2) red
17. Side warning light (2) red per side
18. Grill light (2) red
19. Side flood light (2)
19a. Rear flood light (1)
20. Spot light (clear) (2) w/s pillars
20a. Spot light (clear) [optional location]

*Flashing on turns with front/rear turn signal & vehicular hazard warning signal flasher.

Figure 1

Conventional, cab-chassis with modular ambulance body.

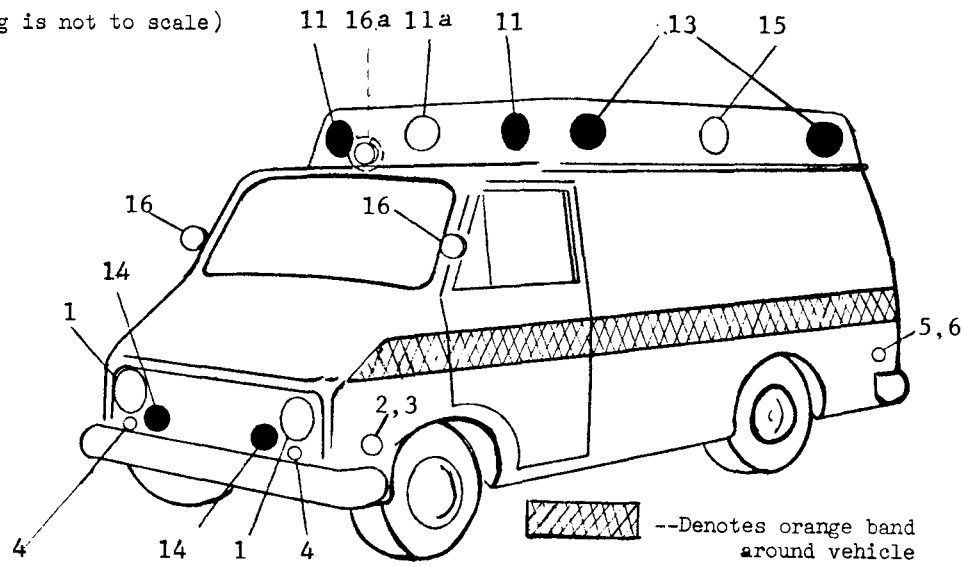
FOR VEHICLES OF LESS THAN 80 INCHES OVERALL WIDTH
RECOMMENDED LAMP AND REFLECTOR LOCATIONS
IN ACCORDANCE WITH THE
FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 108
AND FEDERAL SPECIFICATIONS KKK-A-1822

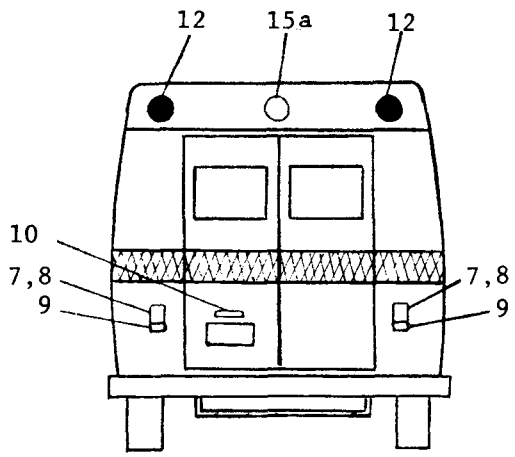
TYPE II

NOTE

LAMPS AND REFLECTORS MAY BE MOUNTED AT OTHER PRACTICABLE LOCATIONS PROVIDED LOCATION AND VISIBILITY REQUIREMENTS OF FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 108 AND FEDERAL AMBULANCE SPECIFICATIONS KKK-A-1822 ARE MET.

(Drawing is not to scale)





LEGEND AMBULANCE TYPE II
FMVSS No. 108

1. Headlamp (2) white (4 white optional)
*2. Front side marker lamp (2) amber
3. Front side reflex reflector (2) amber
4. Front turn signal (2) amber (includes vehicular hazard warning signal flasher)
*5. Rear side marker lamp (2) red
6. Rear side reflex reflector (2) red
7. Rear reflect reflector (2) red
8. Rear stop, tail & turn signal lamp (2) red (turn signal section may be amber, includes vehicular hazard warning signal flasher)
9. Rear backup lamp (1) white
10. Rear license plate lamp (1) white

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11. Front warning light (2) red
11a. Front warning light (1) white
12. Rear warning light (2) red
13. Side warning light (2) red Per side
14. Grill light (2) red
15. Side flood light (2)
15a. Rear flood light (1)
16. Spot light (clear) (2) w/s pillars
16a. Spot light (clear, optional location)

*Flashing on turns with front/rear turn signal & vehicular hazard warning signal flasher.

Figure 2

Standard van, (FC) integral cab-body ambulance.

FOR VEHICLES OF 80 OR MORE INCHES OVERALL WIDTH

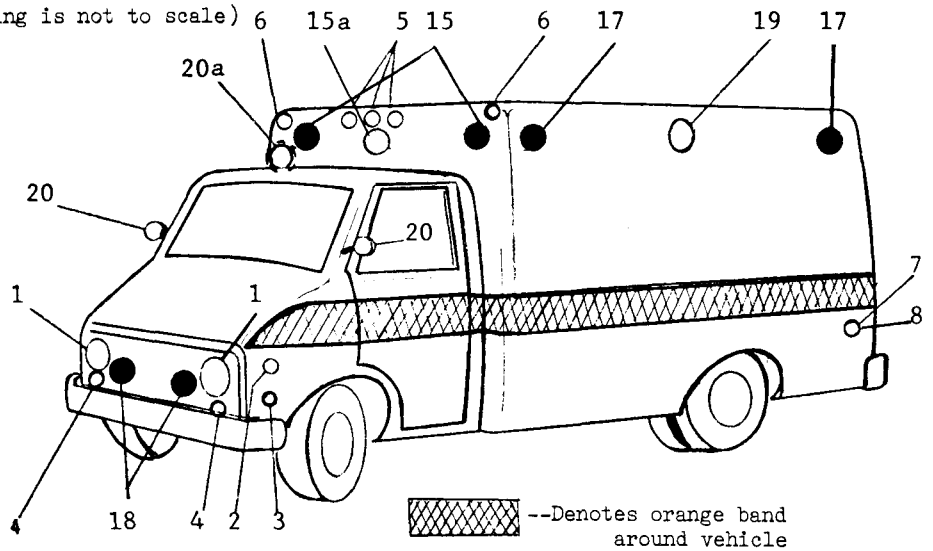
**RECOMMENDED LAMP AND REFLECTOR LOCATIONS
IN ACCORDANCE WITH THE
FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 108
AND FEDERAL AMBULANCE SPECIFICATIONS KKK-A-1822**

TYPE III

NOTE

LAMPS AND REFLECTORS MAY BE MOUNTED AT OTHER PRACTICABLE LOCATIONS PROVIDED LOCATION AND VISIBILITY REQUIREMENTS OF FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 108 AND FEDERAL AMBULANCE SPECIFICATIONS KKK-A-1822 ARE MET.

(Drawing is not to scale)



LEGEND AMBULANCE TYPE III
FMVSS No. 108

1. Headlamp (2) white [(4) white optional]
*2. Front side marker lamp (2) amber
3. Front side reflex reflector (2) amber
4. Front turn signal (2) amber [includes vehicular hazard warning signal flasher]
5. Front identification lamps (3) amber
6. Front clearance lamp (2) amber
*7. Rear side marker lamp (2) red
8. Rear side reflect reflector (2) red
9. Rear identification lamps (3) red
10. Rear clearance lamp (2) red
11. Rear reflect reflector (2) red
12. Rear, stop, tall, & turn signal lamp (2) red [turn signal section may be amber, includes vehicular hazard warning signal flasher]
12a. Rear turn signal (2) amber [optional location]
13. Rear backup lamp (1) white
14. Rear license plate lamp (1) white

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15. Front warning light (2) red
15a. Front warning light (1) white
16. Rear warning light (2) red
17. Side warning light (2) red per side
18. Grill light (2) red
19. Side flood light (2)
19a. Rear flood light (1)
20. Spot light (clear) (2) w/s pillars
20a. Spot light (clear) [optional location]

*Flashing on turns with front/rear turn signal & vehicular hazard warning signal flasher.

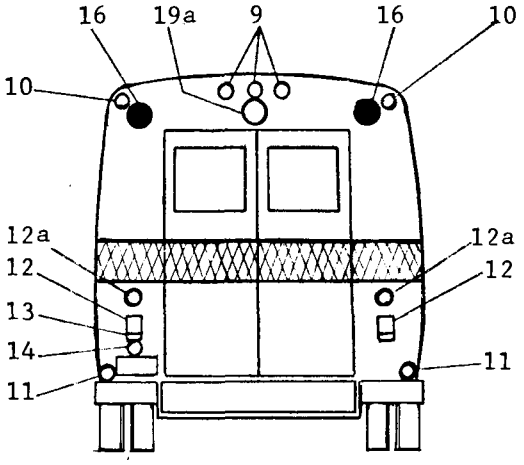
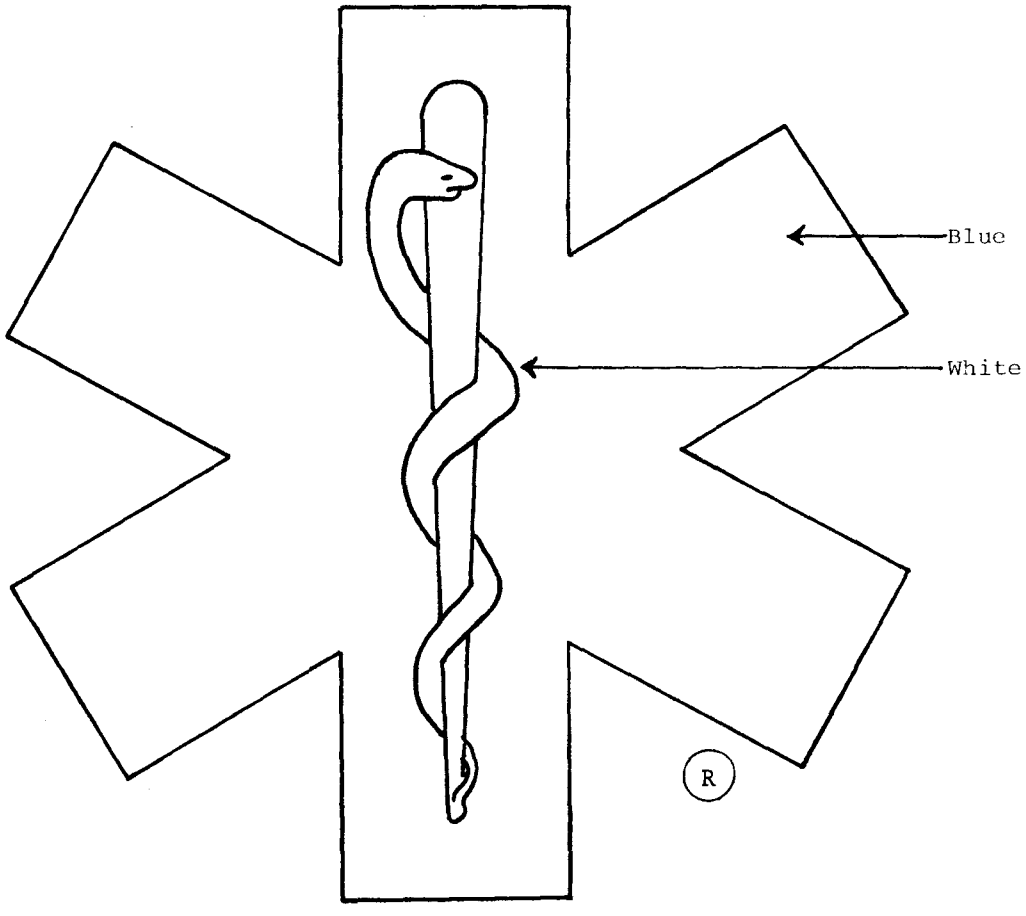


FIGURE 3

Specialty Van, forward control integral cab-body or containerized modular ambulance

"STAR OF LIFE SYMBOL"

The "Star of Life" is a six-barred cross upon which is superimposed the Staff of Aesculapius (es"cu-la'pi-us) who, in both Greek and Roman Mythology, was the god of medicine and healing.



Dimensions:	Size A	Size B	Size C	Size D
Length of bar	3"	12"	16"	32"
Width of bar	3/4"	3"	4"	8"
Length of Staff	2 1/2"	9 1/2"	12 1/2"	25"
White background (if required)	4" square	14" square	18" square	--

All angles 60°
Deviations must be proportionate.

Figure 4

12 VOLT ELECTRICAL SYSTEM - FUNCTIONAL DIAGRAM

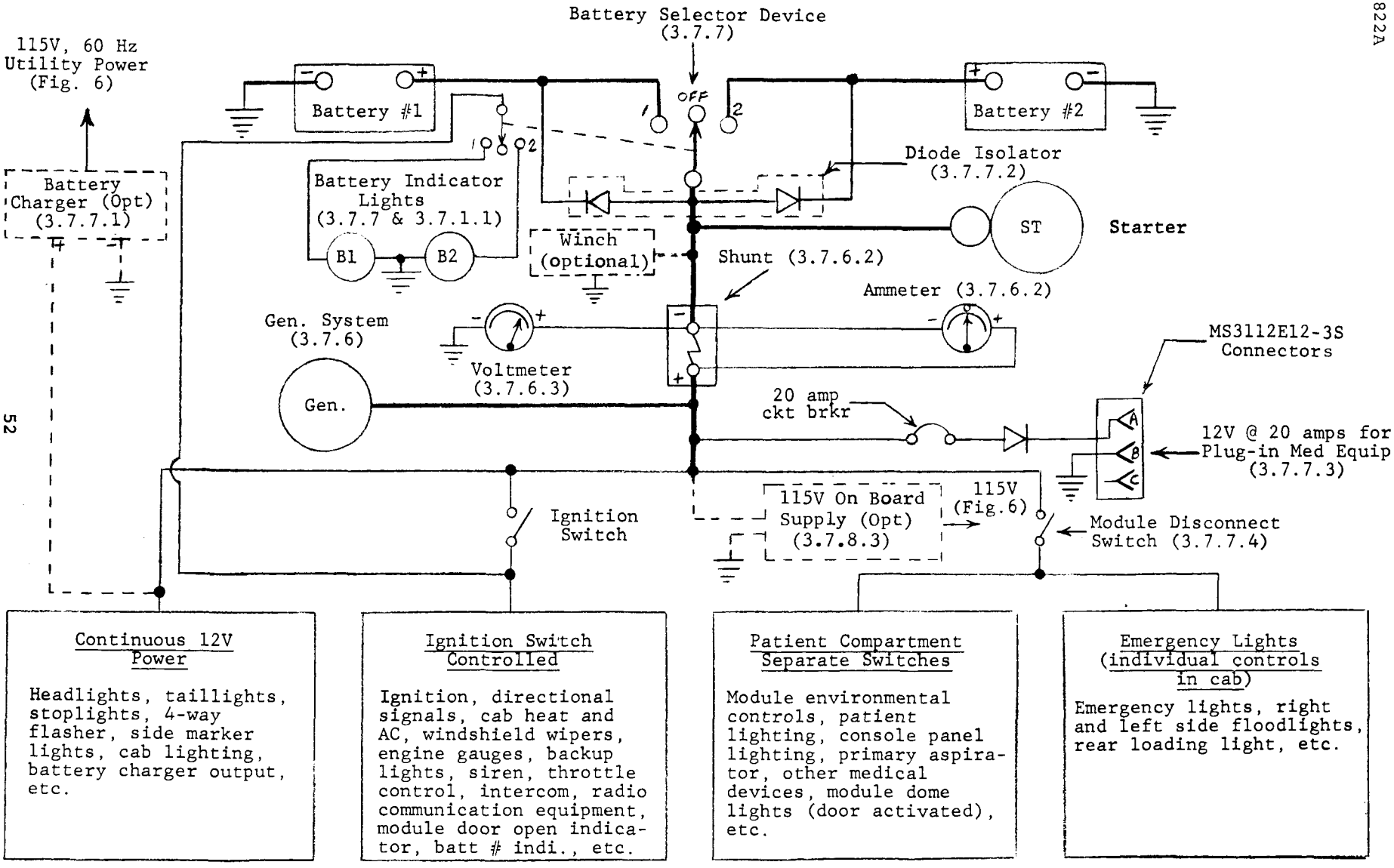


Figure 5

115 VAC ELECTRICAL SYSTEM FUNCTIONAL DIAGRAM

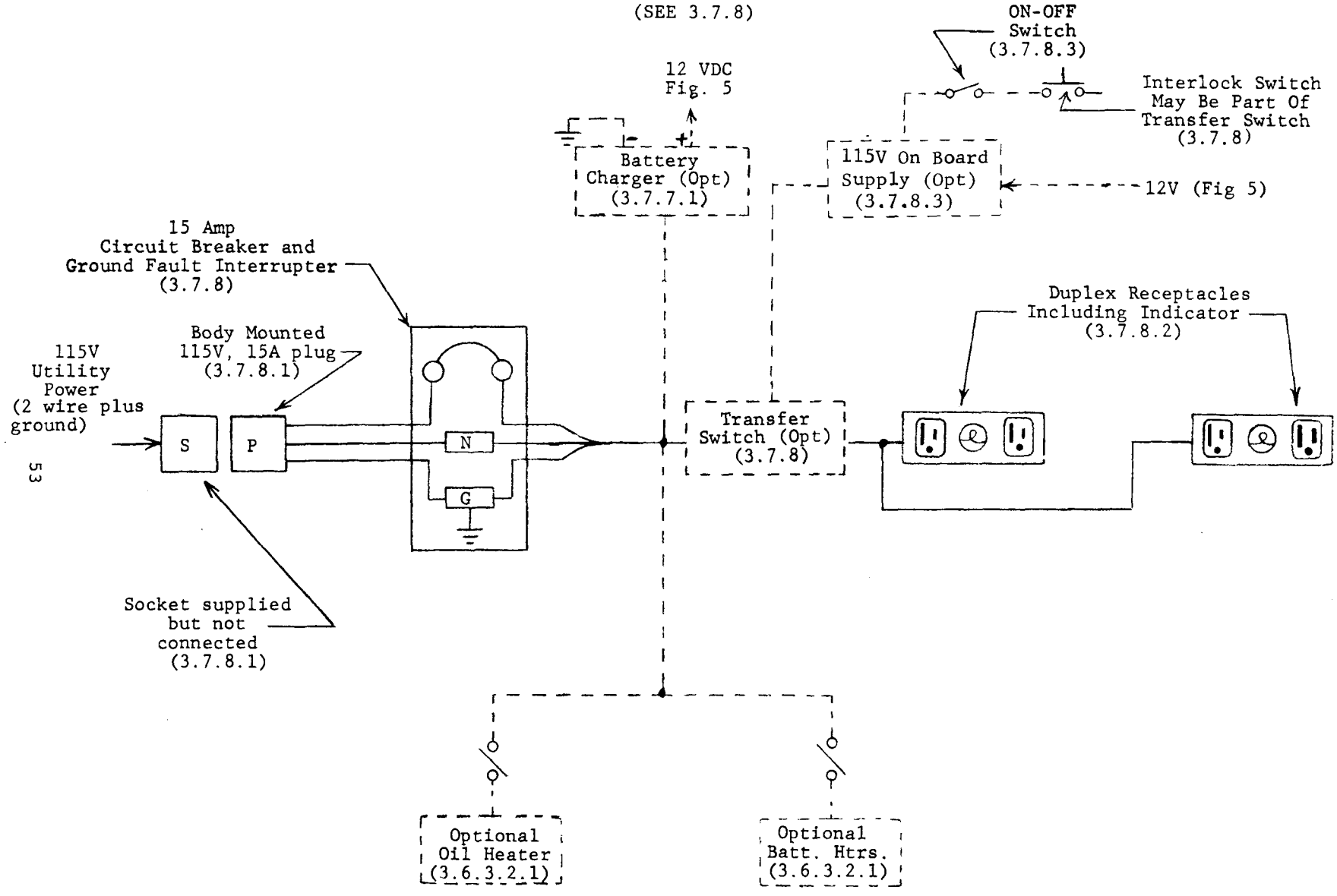


Figure 6

INDEX

Reference are to paragraphs and page number

A

B

C

Reference are to paragraphs and page number

D

E

F

Reference are to paragraphs and page number

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I

L

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Reference are to paragraphs and page number

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W

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GENERAL SERVICES ADMINISTRATION - FEDERAL SUPPLY SERVICE

SPECIFICATION COMMENT SHEET

BUDGET BUREAU NO. 29-R0175

INSTRUCTIONS

This form provides a way for users of this document to inform the originator of problems encountered in its use. It is not to be used to request changes to accommodate proprietary features. All comments will be considered and appreciated, but please do not expect a reply. To comment: detach, complete, fold, staple, and mail. General Services Admin., FSS (FREA), Wash., DC 20406

NOTE: Comments on this form do not constitute or imply authorization to waive any part of the document or serve to amend contractual requirements.

1. SPECIFICATION

KKK-A-1822A

AMBULANCE
Emergency Medical Care Vehicle

2. CONTRACT NO. *(If any)*	3. QUANTITY ON CONTRACT *(Optional)*	4. DOLLAR VALUE *(Optional)*

5. GENERAL NATURE OF PROBLEM *(e.g., inspection difficulties, manufacturers unable to meet tolerances, containers collapse under normal warehousing conditions, etc.)*

6. SPECIFIC REQUIREMENTS AFFECTED *(Include paragraph number and lines of wording)*

7. SPECIFIC PROBLEMS *(e.g. tests in 4.2.2 will not assure that the battery will last required time; temperature ranges in table 2 do not conform to commercially available items.)*

8. RECOMMENDATIONS

9. NAME OF MANUFACTURER, ASSOCIATION, GOVT., AGENCY, ETC.	10. ADDRESS *(Number, Street, City, State and Zip Code)*

11. NAME AND TITLE OF SUBMITTER	12. DATE

FOLD

GENERAL SERVICES ADMINISTRATION

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General Services Administration
Federal Supply Service (FREA)
Washington, D. C. 20406

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GSA FORM FEB 69 2200

KKK-A-1822A
NOTICE-2
August 14, 1981

FEDERAL SPECIFICATION

AMBULANCE

Emergency Medical Care Surface Vehicle

This notice is approved by the General Services Administration.

Page 28

Paragraph 3.12.1.1, On the sixth line down, delete the following: "a maximum flow rate of 300 liters per minute (LPM) with a full tank and"

(NOTE: This requirement is unnecessary.)

Notices are not cumulative and shall be retained until such time as the specification is revised.

FSC 2310

FEDERAL SPECIFICATION

AMBULANCE

EMERGENCY MEDICAL CARE VEHICLE

This amendment which forms a part of Federal Specification KKK-A-1822A dated April 1, 1980, is approved by the General Services Administration for the use of all Federal agencies.

Page 1

Paragraph 1.1.3 First line, change the date "January 1, 1981" to "July 1, 1981."

Page 3

Paragraph 2.2 Under Society of Automotive Engineers (SAE), Delete: J555: Truck, truck-tractor, trailer and motor coach wiring.

Add to the bottom of the list:

J1292: Automobile, truck, truck-tractor, trailer and motor coach wiring.

Page 6

Paragraph 3.4.2 Delete entirely and substitute:

Paragraph 3.4.2 Temperature conditions. The ambulance vehicle and the exterior mounted equipment and devices shall be capable of normal satisfactory performance in ambient temperatures of -30 degrees to +125 degrees F, when serviced in accordance with the manufacturer's recommendations (see 4.4). Other equipment (including medical) furnished inside the ambulance shall be capable of normal operation after storage in -30 degrees F and +150 degrees F for 24 hours, then operated for one hour at 0 degrees F and 110 degrees F after a 10 hour storage at these temperatures. Type certifications are acceptable when in accordance with 4.3.4.

Page 7

Paragraph 3.4.10 Delete entirely and substitute:

3.4.10 Fording. The vehicle shall be capable of three (3) fordings, without stalling the engine, or damage to running gear, while being driven through a minimum of eight inches of water at speeds of five to ten mph for a distance of at least 100 feet. Test under 4.4.4.

Page 8

Paragraph 3.5.6 Delete entirely and substitute:

3.5.6 Cab to axle (CA) type I and III vehicles. Cab to axle (CA) dimension of the vehicle chassis shall permit a minimum of 50 percent of the outside body length forward of the rear axle centerline, including the cab to body clearance. Bodies designed with wheel opening shall have the rear wheels centered $\pm$ 2 inches within the opening.

Page 9

Paragraph 3.6.4.5 Delete entirely and substitute:

3.6.4.5 Cooling system. The engine cooling system shall be a closed, air free liquid state type, with a coolant overflow recovery tank and compensating system. The supplier shall provide the heaviest duty components and maximum size cooling system available from

the chassis manufacturer applicable to the vehicle offered. The cooling system design shall maintain the engine at safe operating temperatures at all driveable altitudes and grades encountered during on and off road vehicle use. Verification test; the cooling system shall be capable of maintaining a safe engine operating temperature for a period of not less than 40 minutes at sea level in an ambient temperature of 95 degrees F, ± 2 degrees, at the engine speed required to maintain the generating systems as specified in 3.7.6.

Paragraph 3.6.4.6 Exhaust system. After the last sentence in this paragraph, add the following:

"Exhaust tailpipe (outlets) shall not terminate within six inches of the vertical axis of fuel filler opening(s).

Page 11

Paragraph 3.7.2 Delete entirely the portion of the paragraph on this page and substitute the following:

3.7.2 Wiring installation. The ambulance body and accessory electrical equipment shall be served by circuit(s) separate and distinct from vehicle chassis circuits. All vehicle wiring shall be copper and conform to all the SAE J1292 requirements and have type GPT thermoplastic or better insulation conforming to SAE J1128. The wiring shall be color coded or permanently marked for identification with easily read numbers and/or letters, and routed in conduit or looms conforming to SAE J562 as applicable. All wiring shall be located in accessible, enclosed, and protected locations and kept at least six inches away from exhaust system components. Electrical wiring and components shall not terminate in the oxygen storage compartment except for the compartment light and switch plunger or trigger device. Wiring necessarily passing through an oxygen compartment shall be routed in a metallic conduit (see 3.11.3). All conduits, looms, and wiring shall be secured to the body or frame with insulated metal cable straps in order to prevent sagging and movement which results in chafing, pinching, snagging or any other damage. All apertures on the vehicle . . .

Page 13

Paragraph 3.7.7 Delete the 2nd paragraph and substitute:

"Battery ratings shall conform to SAE J537. Batteries shall be located in a ventilated area, sealed off from occupant compartments, and shall be readily accessible for servicing and removal. When batteries are mounted in the engine compartment, they shall be provided with a heat shield as a safeguard against high underhood temperatures."

Page 14

Paragraph 3.7.7.3 Delete entirely and substitute:

3.7.7.3 Internal 12 VDC power, (reference figure 5). The patient compartment shall be furnished with a 12 VDC, 20 ampere capacity, separately protected circuit, with two (2) outlet receptacles. This circuit shall also include a (low voltage drop) "Schottky" diode to isolate medical equipment batteries from any electrical loads that the remainder of the ambulance electrical system may impose. The Schottky diode shall be heat-sink mounted, have an inverse voltage rating of at least 45 volts, and also be rated to carry the maximum short circuit current until the circuit breaker opens. The diode shall be physically located in an accessible location and be electrically connected between the circuit breaker and the "action wall" mounted receptacle. Unless otherwise specified, the receptacles shall be a military type connector of the following generic designation, MS3112E12-3S, or its interchangeable commercial equivalent. The polarity of the connector shall be as follows: Pin A -+12V, Pin B - Ground, Pin C - not used. The receptacles shall be located on a vertical surface of the "action wall". The mating plug attached to the medical equipment shall be an MS3116F12-3P or its interchangeable commercial equivalent. The polarity for the plug shall be the same as above. Two of these unwired plugs shall be furnished and tagged with polarity requirements and shall be connected to the receptacles. (NOTE: These connectors are widely available directly from most major industrial electronics distributors).

Paragraph 3.7.12 Delete entirely and substitute:

3.7.12 Electromagnetic radiation of electrical and electronic components. In addition to OEM chassis, all electrical components, electronic equipment, and devices used and installed on or in the ambulance, shall be electromagnetic radiation suppressed, filtered, or shielded to prevent interference to radio and telemetry equipment aboard the vehicle and the surrounding area. Such devices and equipment shall be tested and certified to prove that their RFI does not exceed the maximum limits of SAE J551. Type approval test acceptable as per 4.3.4 for 4.4.2.

Page 16

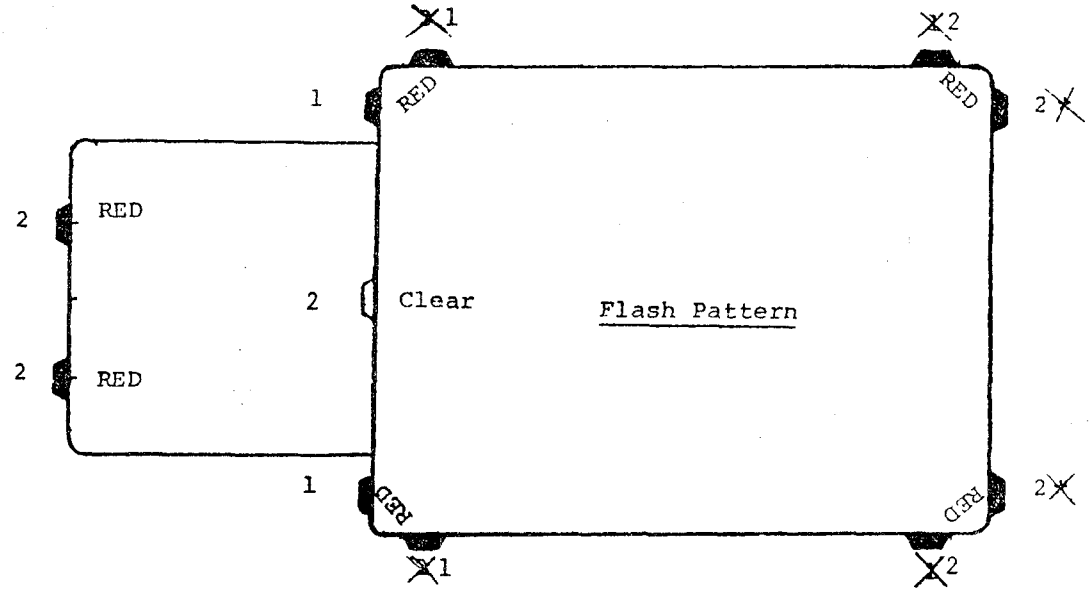
Paragraph 3.8.2 Delete entirely and substitute:

3.8.2 Ambulance emergency lighting. The emergency lighting system must provide the ambulance with 360 degrees of conspicuity for safety during its missions. The system must display highly perceptible and attention-getting signals that function in a modal system, and convey the message in the PRIMARY MODE - "Clear the Right-of-Way" and in the SECONDARY MODE - "Hazard Vehicle Stopped on Right-of-Way". The ambulance standard warning light system shall not impose an electrical load exceeding 40 amperes. Additional auxiliary warning lights, if specified (see 6.2), shall not obscure the light output of the standard warning light system. Auxiliary warning lights furnished shall be separately switched. Any warning devices furnished in addition to the specified system shall be compensated for with reserve or additional generating capacity as required in 3.7.6.

The ambulance standard emergency warning light system shall contain ten (10) fixed red lights and one (1) fixed clear light. These lights shall function in a dual mode system as shown in Table I, and meet the physical and photometric requirements of 3.8.2.1. The upper body warning lights shall be identical and mounted at the extreme upper corner areas of the ambulance body below the horizontal roofline, with the single clear light mounted midway between the two front facing red upper corner lights (see figures 1, 2, and 3). The standard warning lights shall not be obstructed by doors, auxiliary lights, or siren(s). The red "grill" lights shall be located at least 30 inches above the ground but below the bottom edge of the windshield and be laterally separated by at least 24 inches. All warning lights furnished shall be mounted to project their highest effective intensity beams on the horizontal axis.

Page 17

Delete, and substitute the following:



1 - indicates lights flashing at the same time
2 - indicates lights flashing 180° out of phase with 1
~~*In secondary mode, upper rear lights may alternately flash.~~
**The "Tertiary Mode" which uses the vehicles 4-way flashers (Directional Signals) should only be used while the vehicle is stationary.

Paragraph 3.8.2.2 Tenth line down after "mode" insert "and, when specified (6.2), the Day-Night switch".

Paragraph 3.8.2.3 Delete entirely and substitute:

3.8.2.3 Tests, warning light system. The ambulance manufacturer shall measure and record the total current load of the standard emergency warning light system on the vehicle as manufactured, when operated in the mode which draws maximum current. This load current test shall be conducted during the "ambulance's electrical system test" (3.7.6 and AMD Std. 005). The standard warning light system and related components and devices shall be tested, approved, and listed with the American Association of Motor Vehicle Administrators (AAMVA) for conformance to the requirements herein.

Paragraph 3.8.5 Delete entirely and substitute:

3.8.5 Ambulance interior lighting. The basic interior ambulance lighting configuration shall be designed to minimize electrical loads and include: A driver's compartment dome light, instrument panel lights, master switch panel and console light(s), and glove box light. Lighting shall be designed and located so that no glare is reflected into the driver's eyes or his line of vision from switch control panels or other areas that are illuminated while the vehicle is in motion. The patient compartment lighting 3.8.5.1 shall also include stepwell lighting (3.10.12) and control panel lighting.

Paragraph 3.10.2 Delete entirely and substitute:

3.10.2 Cab and body access between compartments, Type 1. The ambulance cab and body bulkheads shall have an aligned window opening of at least 150 square inches for visual and voice check of conditions in the patient's compartment. The window opening shall be an adjustable, transparent, shatterproof panel treated or located in the bulkhead(s) to prevent interferring with the driver's night vision. (See 3.9.9 and 3.10.14).

Paragraph 3.10.4 Delete the third paragraph "Width", and substitute:

"Width: The width of the compartment, after installation of the cabinets shall provide 19 inches ± 6 inches of clear aisle walkway between the secured primary cot and the squad bench or cot."

Paragraph 3.10.6 Delete entirely and substitute:

3.10.6 Ambulance body structure. All parts of the ambulance body and attachments shall be fastened with rust resistant fasteners in a manner which will preclude loosening. Cabinets, benches, partitions, oxygen cylinder holders, guide rails, and cot holders shall be attached to metal tapping plates and/or framing welded to the body structure. These components shall be fastened by welding, bolting, or using tapered tapping screws, at least on 24 inch centers or less as applicable to the component being installed. Self-tapping wood/metal screws or nails shall not be used in assembling the ambulance except for light trim panels and wood flooring.

Vehicles furnished with fiberglass/plastic exterior roof panel shall have the center section reinforced with metal wire screening (see 3.14.3 for a radio antenna ground plane). Ambulance bodies with an extended roof shall have the roof structural members permanently fastened to structual members of the body (welded, bolted, and sealed) to prevent separation in an accident. Drip rail(s) shall be provided over doors of type I and III or around the entire module unit and have drain points at each corner. Body skirt(s) shall not extend more than 3 inches below the vehicle cab/body. On type I and III bodies, when specified (see 3.15.3 - 18), a minimum 1x2 inch protective rub rail on the right and left sides located in the lower third section of the body shall be provided. The body, roof, and panel joints shall be watertight. All openings between the chassis-body and occupant carrying compartments due to alteration or construction shall be sealed, including the bulkhead space between cab and body of type I and III (see 3.9.9).

Paragraph 3.10.9 Delete entirely and substitute:

3.10.9 Door latches, hinges, and hardware. Door latches, hinges, and hardware furnished by chassis manufacturers 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 opening and closing. A minimum 6-inch 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 shall be provided. Hardware shall be chrome plated, stainless steel, or anodized aluminum. Inside door handles shall be designed and placed so they cannot be operated (opening a door) when accidentally hit or used as a grab handle. Ambulance body, side and rear door hardware installed by the ambulance body manufacturer shall be tested to prove installation meets or exceeds the requirements of AMD Standard 002 -Body and door retention components tests.

Paragraph 3.10.15 Delete entirely the portion on this page and substitute:

3.10.15 Partition for Type II and III vehicles. A full height and width partition or bulkhead (with or without compartments) having roll bar characteristics and an opening with a door, shall be placed between the driver and patient's compartment. This partition shall be located directly behind the driver and companion seats when in the . . .

Page 24

First paragraph, delete entirely and substitute:

rearmost position. The partition shall be secured at the sides, ceiling, and floor, by welding or bolting to tapping plates. A partition opening at least 17 inches wide and 46 inches high shall provide an aisle between the compartments. The door shall have at least a 150 square inch transparent shatterproof viewing panel in the center section at the driver's eye level. The door shall be securable with a self-latching device in the open and closed positions from the driver's side (see 3.10.2).

Page 26

Paragraph 3.11.3 Delete entirely and substitute:

3.11.3 Storage 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 shatterproof transparent sliding doors provided with a finger pull opening or recessed metal cups or equal. Storage compartments shall be divided into sections, shelves shall be adjustable, drawers shall be marine style slide or tilt, and all shall be removable. Cabinet compartment doors and drawers, sliding or hinged, shall automatically latch or be fitted with friction holding devices when in a closed position. Side cabinet shelves shall be no more than 12 inches in depth when located above the vehicle belt level. Storage compartments, cabinets, and support equipment area interior surfaces shall be finished in accordance with 3.10.17. Cabinets shall be firmly anchored (bolted or welded) to tapping plates of the body structure (3.10.6). Tops of the cabinets and shelves shall be bordered or surrounded by a lip of not less than 1/2 inch in height. Storage for the main oxygen cylinder (see 3/12/1) shall be accessible for replacement from an outside position. The oxygen compartment shall be provided with at least a nine (9) square inch louvered device located near or at the top of the compartment, permitting any leaking oxygen gas to dissipate/vent to the outside of the ambulance. Oxygen cylinder compartment shall not be utilized for storage of any other equipment. Any wiring and electrical devices within this compartment shall comply to 3.7.2. Oxygen cylinder(s) shall be mounted with a restraining device(s), required for the crashworthiness tests of AMD Standard 003 Oxygen Tank Retention System.

Page 27

Paragraph 3.11.9 Delete entirely and substitute:

3.11.9 IV holders for intravenous fluid containers. Two near flush style, IV ceiling holders or hooks with strapping device to tie and control IV bags/bottles shall be provided. The ceiling holders shall be located adjacent to the side wall, at the head of the primary patient and one at the head of the secondary patient's cot (squad bench). When specified in 3.15.4, code M2, a detachable type, rigid telescoping IV pole and holder, with a 52 inch minimum height, when extended, shall be provided the style 1 cot. It shall be mounted on the left side at the front end of the cot.

Page 30

Paragraph 3.13.1 After the last sentence add:

"Connecting hoses for the heating and air conditioning systems shall be supported at least every 12 inches by rubber insulated metal clamping devices."

Paragraph 3.13.4 and 3.13.5 Fourth line down, delete "(floor to ceiling)".

Page 40

Paragraph 4.3.1 Second line, change "January 1, 1981" to "July 1, 1981".

Page 41

Paragraph 4.4.2 Line "h" change to read:

"Electromagnetic radiation of electrical/electronic devices tests. Type approval acceptable."

Page 43

Paragraph 6.2 Ordering data, item (g) Wheels, after: "desired", delete: "if Type I".

Page 47

Paragraph 6.9 Changes and amendments, delete: "Federal Supply Service, Automotive and Tools Division (FREA-A), and substitute: "Transportation and Public Utilities Service (TCE)".

Change Civil Coordination & Preparing Activity from: "GSA-FSS (FREA)" to "GSA-TPUS-TCE" in lower right side of page.

KKK-A-1822A
AMENDMENT -2
JULY 1, 1983
SUPERSEDING
AMENDMENT -1
APRIL 1, 1981

FEDERAL SPECIFICATION

AMBULANCE

EMERGENCY MEDICAL CARE SURFACE VEHICLE

THIS AMENDMENT FORMS A PART OF FEDERAL SPECIFICATION KKK-A-1822A DATED APRIL 1, 1980, AND IS APPROVED BY THE GENERAL SERVICES ADMINISTRATION FOR USE BY ALL FEDERAL AGENCIES.

PAGE 1

* PARAGRAPH 1.1 SCOPE. LINE 2, CHANGE "CAN BE" TO "ARE"; AFTER THE LAST SENTENCE, ADD "MILITARY AGENCIES PURCHASING TYPE IIM AMBULANCE, MUST REFER TO THE APPENDIX SECTION (PAGE 59)."

PARAGRAPH 1.1.3 DELETE ENTIRELY AND SUBSTITUTE:

PARAGRAPH 1.1.3 CERTIFIED "STAR OF LIFE" AMBULANCE. AFTER JULY 1, 1981, THE AMBULANCE MANUFACTURER/CONTRACTOR SHALL FURNISH THE PURCHASER(S) CITING THIS SPECIFICATION AN AUTHENTICATED CERTIFICATION AND LABEL (SEE 3.19, PAGE 36) CERTIFYING A "STAR OF LIFE" AMBULANCE. THE CERTIFICATIONS VERIFY THAT THE AMBULANCE FURNISHED COMPLIES WITH THIS SPECIFICATION AND APPLICABLE AMENDMENTS (IF ANY) IN EFFECT ON THE DATE OF MANUFACTURE (SEE 4.3). AMBULANCE VEHICLES SO CERTIFIED MAY DISPLAY THE REGISTERED "STAR OF LIFE" SYMBOL, AS DEFINED BY THE U.S. DEPARTMENT OF TRANSPORTATION (DOT) AND THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (NHTSA) SYMBOL, SEE FIGURE 4.

PAGE 2

UNDER FEDERAL SPECIFICATIONS, ADD:

* FEDERAL STANDARDS:

FEDERAL STANDARD NO. 297, RUSTPROOFING OF AUTOMOTIVE VEHICLES

(NOTE: RUSTPROOFING IS BEING DELETED FROM MIL. STD. 1223.)

PAGE 3

* MILITARY STANDARDS: CHANGE MIL-STD-1223 TO READ:

"MIL-STD-1223 - NON-TACTICAL WHEELED VEHICLES TREATMENT, PAINTING, IDENTIFICATION MARKING, AND DATA PLATES STANDARD."

PARAGRAPH 2.2 OTHER PUBLICATIONS. UNDER SOCIETY OF AUTOMOTIVE ENGINEERS (SAE), DELETE: "J555: TRUCK, TRUCK-TRACTOR, TRAILER, AND MOTOR COACH WIRING."

ADD TO THE BOTTOM OF THE LIST:

"J1292: AUTOMOBILE, TRUCK, TRUCK-TRACTOR, TRAILER, AND MOTOR COACH WIRING."

PAGE 4

AT THE BOTTOM OF THIS PAGE, ADD:

* 2.3 ORDER OF PRECEDENCE. IN THE EVENT OF A CONFLICT BETWEEN THE TEXT OF THIS SPECIFICATION AND THE REFERENCES CITED HEREIN, THE TEXT OF THIS SPECIFICATION SHALL TAKE PRECEDENCE.

PAGE 5

AFTER PARAGRAPH 3.1.5, ADD:

* 3.1.6 FOUR WHEEL DRIVE, CLASS 2, 4X4. CLASS 2 AMBULANCE SHALL BE THE TRUCK ORIGINAL EQUIPMENT MANUFACTURER'S (OEM) 4X4 VEHICLE, OR SHALL BE AN OEM 4X2 MODEL PROFESSIONALLY ENGINEERED CONVERSION TO A FOUR WHEEL DRIVE VEHICLE, CONFORMING TO ALL APPLICABLE REQUIREMENTS HEREIN.

PAGE 6

PARAGRAPH 3.3 DELETE ENTIRELY AND SUBSTITUTE:

* 3.3 RECOVERED MATERIALS. ALL EQUIPMENT, MATERIAL, AND ARTICLES INCORPORATED IN THIS SPECIFICATION ARE TO BE NEW AND FABRICATED USING MATERIALS PRODUCED FROM RECOVERED MATERIALS TO THE MAXIMUM EXTENT POSSIBLE WITHOUT JEOPARDIZING THE INTENDED USE. THE TERM "RECOVERED MATERIALS" MEANS MATERIALS WHICH HAVE BEEN COLLECTED OR RECOVERED FROM SOLID WASTE AND REPROCESSED TO BECOME A SOURCE OF RAW MATERIALS, AS OPPOSED TO VIRGIN RAW MATERIALS. NONE OF THE ABOVE SHALL BE INTERPRETED TO MEAN THAT THE USE OF USED OR REBUILT PRODUCTS IS ALLOWED UNDER THIS DOCUMENT.

PARAGRAPH 3.4.2 DELETE ENTIRELY AND SUBSTITUTE:

* 3.4.2 TEMPERATURE CONDITIONS. THE AMBULANCE VEHICLE AND THE EXTERIOR MOUNTED EQUIPMENT AND DEVICES SHALL BE CAPABLE OF NORMAL SATISFACTORY PERFORMANCE IN AMBIENT TEMPERATURES OF -30 DEGREES TO +125 DEGREES F., WHEN SERVICED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS (SEE 4.4). OTHER AMBULANCE EQUIPMENT (INCLUDING MEDICAL DEVICES, EXCEPT RELATED BATTERIES) FURNISHED INSIDE THE AMBULANCE SHALL BE CAPABLE OF NORMAL OPERATION AFTER STORAGE IN -30 DEGREES F. AND +150 DEGREES F. FOR 12 HOURS, THEN OPERATED FOR ONE HOUR AT 0 DEGREES F. AND 110 DEGREES F. AFTER A 5 HOUR STORAGE AT THESE TEMPERATURES. TYPE CERTIFICATIONS ARE ACCEPTABLE WHEN IN ACCORDANCE WITH 4.3.4.

PAGE 7

PARAGRAPH 3.4.10 DELETE ENTIRELY AND SUBSTITUTE:

3.4.10 FORDING. THE VEHICLE SHALL BE CAPABLE OF THREE (3) FORDINGS, WITHOUT STALLING THE ENGINE, OR DAMAGE TO RUNNING GEAR, WHILE BEING DRIVEN THROUGH A MINIMUM OF EIGHT INCHES OF WATER AT SPEEDS OF FIVE TO TEN MPH FOR A DISTANCE OF AT LEAST 100 FEET. TEST UNDER 4.4.4.

PARAGRAPH 3.4.11.6 DELETE ENTIRELY AND SUBSTITUTE:

* PARAGRAPH 3.4.11.6 TURNING CLEARANCE. UNLESS OTHERWISE SPECIFIED, SHALL BE CHASSIS OEM STANDARD.

PAGE 8

PARAGRAPH 3.5.6 DELETE ENTIRELY AND SUBSTITUTE:

3.5.6 CAB TO AXLE (CA) TYPE I AND III VEHICLES. CAB TO AXLE (CA) DIMENSION OF THE VEHICLE CHASSIS SHALL PERMIT A MINIMUM OF 50 PERCENT OF THE OUTSIDE BODY LENGTH FORWARD OF THE REAR AXLE CENTERLINE, INCLUDING THE CAB TO BODY CLEARANCE. BODIES DESIGNED WITH WHEEL OPENING SHALL HAVE THE REAR WHEELS CENTERED ± 2 INCHES WITHIN THE OPENING.

PAGE 9

PARAGRAPH 3.6.4.5 DELETE ENTIRELY AND SUBSTITUTE:

3.6.4.5 COOLING SYSTEM. THE ENGINE COOLING SYSTEM SHALL BE A CLOSED, AIR FREE LIQUID STATE TYPE, WITH A COOLANT OVERFLOW RECOVERY TANK AND COMPENSATING SYSTEM. THE SUPPLIER SHALL PROVIDE THE HEAVIEST DUTY COMPONENTS AND MAXIMUM SIZE COOLING SYSTEM AVAILABLE FROM THE CHASSIS MANUFACTURER APPLICABLE TO THE VEHICLE OFFERED. THE COOLING SYSTEM DESIGN SHALL MAINTAIN THE ENGINE AT SAFE OPERATING TEMPERATURES AT ALL

DRIVEABLE ALTITUDES AND GRADES ENCOUNTERED DURING ON AND OFF ROAD VEHICLE USE. VERIFICATION TEST; THE COOLING SYSTEM SHALL BE CAPABLE OF MAINTAINING A SAFE ENGINE OPERATING TEMPERATURE FOR A PERIOD OF NOT LESS THAN 40 MINUTES AT SEA LEVEL IN AN AMBIENT TEMPERATURE OF 95 DEGREES F., ± 2 DEGREES, AT THE ENGINE SPEED REQUIRED TO MAINTAIN THE GENERATING SYSTEMS AS SPECIFIED IN 3.7.6.

PARAGRAPH 3.6.4.6 EXHAUST SYSTEM. AFTER THE LAST SENTENCE IN THIS PARAGRAPH, ADD THE FOLLOWING:

"EXHAUST TAILPIPE (OUTLETS) SHALL NOT TERMINATE WITHIN SIX INCHES OF THE VERTICAL AXIS OF FUEL FILLER OPENING(S)."

AFTER PARAGRAPH 3.6.5.3, ADD:

* 3.6.5.3.1 HEAVY-DUTY SKID PLATE (CLASS 2, 4X4). UNLESS OTHERWISE SPECIFIED (SEE 6.2), A HEAVY-DUTY SKID PLATE SHALL BE INSTALLED PROTECTING ENGINE AND TRANSMISSION (FROM GROUND CONTACT) IF THERE IS LESS THAN 15 INCHES OF CLEARANCE TO THE GROUND. SKID PLATE SHALL BE DEMOUNTABLE FOR SERVICING THE ENGINE AND TRANSMISSION. OPENINGS SHALL BE PROVIDED TO ENABLE DRAINING OF TRANSMISSION AND SERVICING THE UNDERSIDE OF THE ENGINE. FOR FUEL TANK PROTECTION, SEE 3.6.4.4.

PAGE 11

PARAGRAPH 3.7.2 DELETE ENTIRELY THE PORTION OF THE PARAGRAPH ON THIS PAGE AND SUBSTITUTE THE FOLLOWING:

3.7.2 WIRING INSTALLATION. THE AMBULANCE BODY AND ACCESSORY ELECTRICAL EQUIPMENT SHALL BE SERVED BY CIRCUIT(S) SEPARATE AND DISTINCT FROM VEHICLE CHASSIS CIRCUITS. ALL VEHICLE WIRING SHALL BE COPPER AND CONFORM TO ALL THE SAE J1292 REQUIREMENTS AND HAVE TYPE GPT THERMOPLASTIC OR BETTER INSULATION CONFORMING TO SAE J1128. THE WIRING SHALL BE COLOR CODED OR PERMANENTLY MARKED FOR IDENTIFICATION WITH EASILY READ NUMBERS AND/OR LETTERS AND ROUTED IN CONDUIT OR LOOMS CONFORMING TO SAE J562 AS APPLICABLE. ALL WIRING SHALL BE LOCATED IN ACCESSIBLE, ENCLOSED, AND PROTECTED LOCATIONS AND KEPT AT LEAST SIX INCHES AWAY FROM EXHAUST SYSTEM COMPONENTS. ELECTRICAL WIRING AND COMPONENTS SHALL NOT TERMINATE IN THE OXYGEN STORAGE COMPARTMENT EXCEPT FOR THE COMPARTMENT LIGHT AND SWITCH PLUNGER OR TRIGGER DEVICE. WIRING NECESSARILY PASSING THROUGH AN OXYGEN COMPARTMENT SHALL BE ROUTED IN A METALLIC CONDUIT (SEE 3.11.3). ALL CONDUITS, LOOMS, AND WIRING SHALL BE SECURED TO THE BODY OR FRAME WITH INSULATED METAL CABLE STRAPS IN ORDER TO PREVENT SAGGING AND MOVEMENT WHICH RESULTS IN CHAFING, PINCHING, SNAGGING, OR ANY OTHER DAMAGE. ALL APERTURES ON THE VEHICLE...

PAGE 13

PARAGRAPH 3.7.7 DELETE THE 2ND PARAGRAPH AND SUBSTITUTE:

"BATTERY RATINGS SHALL CONFORM TO SAE J537. BATTERIES SHALL BE LOCATED IN A VENTILATED AREA, SEALED OFF FROM OCCUPANT COMPARTMENTS, AND SHALL BE READILY ACCESSIBLE FOR SERVICING AND REMOVAL. WHEN BATTERIES ARE MOUNTED IN THE ENGINE COMPARTMENT, THEY SHALL BE PROVIDED WITH A HEAT SHIELD AS A SAFEGUARD AGAINST HIGH UNDERHOOD TEMPERATURES."

PAGE 14

PARAGRAPH 3.7.7.3 DELETE ENTIRELY AND SUBSTITUTE:

3.7.7.3 INTERNAL 12 VDC POWER, (REFERENCE FIGURE 5). THE PATIENT COMPARTMENT SHALL BE FURNISHED WITH A 12 VDC, 20 AMPERE CAPACITY, SEPARATELY PROTECTED CIRCUIT, WITH TWO (2) OUTLET RECEPTACLES. THIS CIRCUIT SHALL ALSO INCLUDE A (LOW VOLTAGE DROP) "SCHOTTKY" DIODE TO ISOLATE MEDICAL EQUIPMENT BATTERIES FROM ANY ELECTRICAL LOADS THAT THE REMAINDER OF THE AMBULANCE ELECTRICAL SYSTEM MAY IMPOSE. THE SCHOTTKY DIODE SHALL BE HEAT-SINK MOUNTED, HAVE AN INVERSE VOLTAGE RATING OF AT LEAST 45 VOLTS, AND ALSO BE RATED TO CARRY THE MAXIMUM SHORT CIRCUIT CURRENT UNTIL THE CIRCUIT BREAKER OPENS. THE DIODE SHALL BE PHYSICALLY LOCATED IN AN ACCESSIBLE LOCATION AND BE ELECTRICALLY CONNECTED BETWEEN THE CIRCUIT BREAKER AND THE "ACTION

WALL" MOUNTED RECEPTACLE. UNLESS OTHERWISE SPECIFIED, THE RECEPTACLES SHALL BE A MILITARY TYPE CONNECTOR OF THE FOLLOWING GENERIC DESIGNATION. MS3112E12-3S, OR ITS INTERCHANGEABLE COMMERCIAL EQUIVALENT. THE POLARITY OF THE CONNECTOR SHALL BE AS FOLLOWS: PIN A -+12V, PIN B - GROUND, PIN C - NOT USED. THE RECEPTACLES SHALL BE LOCATED ON A VERTICAL SURFACE OF THE "ACTION WALL." THE MATING PLUG ATTACHED TO THE MEDICAL EQUIPMENT SHALL BE AN MS3116F12-3P OR ITS INTERCHANGEABLE COMMERCIAL EQUIVALENT. THE POLARITY FOR THE PLUG SHALL BE THE SAME AS ABOVE. TWO OF THESE UNWIRED PLUGS SHALL BE FURNISHED AND TAGGED WITH POLARITY REQUIREMENTS AND SHALL BE CONNECTED TO THE RECEPTACLES. (NOTE: THESE CONNECTORS ARE WIDELY AVAILABLE DIRECTLY FROM MOST MAJOR INDUSTRIAL ELECTRONICS DISTRIBUTORS.)

PAGE 15

PARAGRAPH 3.7.12 DELETE ENTIRELY AND SUBSTITUTE:

3.7.12 ELECTROMAGNETIC RADIATION AND SUPPRESSION. IN ADDITION TO OEM CHASSIS, ALL ELECTRICALLY OPERATED OR ELECTRICAL GENERATING DEVICES, INCLUDING ALTERNATORS, AIR CONDITIONING, AND WARNING LIGHT SYSTEMS SHALL BE ELECTROMAGNETIC RADIATION SUPPRESSED, FILTERED, OR SHIELDED TO PREVENT INTERFERENCE TO RADIOS AND TELEMETRY EQUIPMENT ABOARD THE VEHICLE AND THE SURROUNDING AREA. WHEN SPECIFIED UNDER 6.2, THE COMPLETED AMBULANCE VEHICLE SHALL BE TESTED AND CERTIFIED TO PROVE THAT THE RFI DOES NOT EXCEED THE MAXIMUM LIMITS OF SAE J551.

PAGE 16

PARAGRAPH 3.8.2 DELETE ENTIRELY AND SUBSTITUTE:

3.8.2 AMBULANCE EMERGENCY LIGHTING. THE EMERGENCY LIGHTING SYSTEM MUST PROVIDE THE AMBULANCE WITH 360 DEGREES OF CONSPICUITY FOR SAFETY DURING ITS MISSIONS. THE SYSTEM MUST DISPLAY HIGHLY RECEPTIBLE AND ATTENTION-GETTING SIGNALS THAT FUNCTION IN A MODAL SYSTEM AND CONVEY THE MESSAGE IN THE PRIMARY MODE - "CLEAR THE RIGHT-OF-WAY" AND IN THE SECONDARY MODE - "HAZARD VEHICLE STOPPED ON RIGHT-OF-WAY." THE AMBULANCE STANDARD WARNING LIGHT SYSTEM SHALL NOT IMPOSE AN ELECTRICAL LOAD EXCEEDING 40 AMPERES. ADDITIONAL AUXILIARY WARNING LIGHTS, IF SPECIFIED (SEE 6.2), SHALL NOT OBSCURE THE LIGHT OUTPUT OF THE STANDARD WARNING LIGHT SYSTEM. AUXILIARY WARNING LIGHTS FURNISHED SHALL BE SEPARATELY SWITCHED. ANY WARNING DEVICES FURNISHED IN ADDITION TO THE SPECIFIED SYSTEM SHALL BE COMPENSATED FOR WITH RESERVE OR ADDITIONAL GENERATING CAPACITY AS REQUIRED IN 3.7.6.

THE AMBULANCE STANDARD EMERGENCY WARNING LIGHT SYSTEM SHALL CONTAIN TEN (10) FIXED RED LIGHTS AND ONE (1) FIXED CLEAR LIGHT. THESE LIGHTS SHALL FUNCTION IN A DUAL MODE SYSTEM AS SHOWN IN TABLE I, AND MEET THE PHYSICAL AND PHOTOMETRIC REQUIREMENTS OF 3.8.2.1. THE UPPER BODY WARNING LIGHTS SHALL BE IDENTICAL AND MOUNTED AT THE EXTREME UPPER CORNER AREAS OF THE AMBULANCE BODY BELOW THE HORIZONTAL ROOFLINE, WITH THE SINGLE CLEAR LIGHT MOUNTED MIDWAY BETWEEN THE TWO FRONT FACING RED UPPER CORNER LIGHTS (SEE FIGURES 1, 2, AND 3). THE STANDARD WARNING LIGHTS SHALL NOT BE OBSTRUCTED BY DOORS, AUXILIARY LIGHTS, OR SIREN(S). THE RED "GRILLE" LIGHTS SHALL BE LOCATED AT LEAST 30 INCHES ABOVE THE GROUND BUT BELOW THE BOTTOM EDGE OF THE WINDSHIELD AND BE LATERALLY SEPARATED BY AT LEAST 24 INCHES. ALL WARNING LIGHTS FURNISHED SHALL BE MOUNTED TO PROJECT THEIR HIGHEST EFFECTIVE INTENSITY BEAMS ON THE HORIZONAL AXIS.

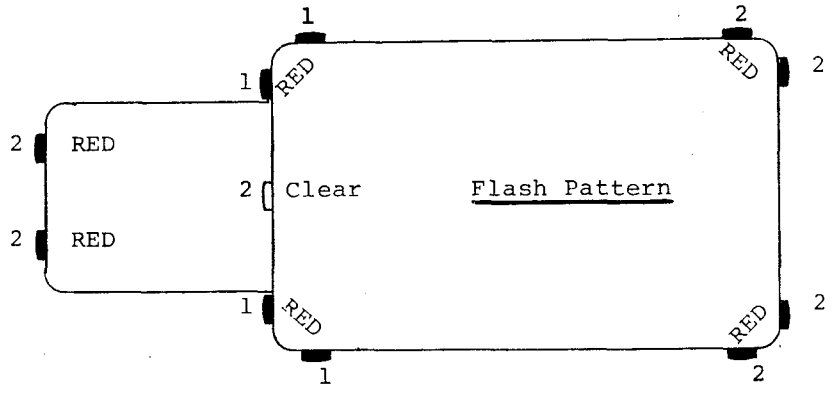
* PARAGRAPH 3.8.2.1 PHOTOMETRIC AND PHYSICAL REQUIREMENTS. LINE 4, CHANGE "20" TO "45" AND SUBSTITUTE THE FOLLOWING CHART:

MINIMUM EFFECTIVE INTENSITY (CANDELA)

COLOR / CONDITION	RED	CLEAR
DAY	800 CD. @ H-V	3,000 CD. @ H-V
	50 CD. AT ALL 5°V-45°H POINTS	200 CD. AT ALL 5°V-45°H POINTS
NIGHT	10-30% OF ABOVE	

PAGE 17

DELETE "FLASH PATTERN" AND SUBSTITUTE THE FOLLOWING:



1 - INDICATES LIGHTS FLASHING AT THE SAME TIME
2 - INDICATES LIGHTS FLASHING 180° OUT OF PHASE WITH 1
**THE "TERTIARY MODE" WHICH USES THE VEHICLE'S 4-WAY FLASHERS (DIRECTIONAL SIGNALS) SHOULD ONLY BE USED WHILE THE VEHICLE IS STATIONARY.

PAGE 18

* PARAGRAPH 3.8.2.2 TENTH LINE DOWN AFTER "ACTIVATED" ADD ", AND WHEN FURNISHED THE SETTING OF DAY-NIGHT SWITCH."

PARAGRAPH 3.8.2.3 DELETE ENTIRELY AND SUBSTITUTE:

3.8.2.3 TESTS, WARNING LIGHT SYSTEM. THE AMBULANCE MANUFACTURER SHALL MEASURE AND RECORD THE TOTAL CURRENT LOAD OF THE STANDARD EMERGENCY WARNING LIGHT SYSTEM ON THE VEHICLE AS MANUFACTURED, WHEN OPERATED IN THE MODE WHICH DRAWS MAXIMUM CURRENT. THIS LOAD CURRENT TEST SHALL BE CONDUCTED DURING THE "AMBULANCE'S ELECTRICAL SYSTEM TEST" (3.7.6 AND AMD STD. 005). THE STANDARD WARNING LIGHT SYSTEM AND RELATED COMPONENTS AND DEVICES SHALL BE TESTED, APPROVED, AND LISTED WITH THE AMERICAN ASSOCIATION OF MOTOR VEHICLE ADMINISTRATORS (AAMVA) FOR CONFORMANCE TO THE REQUIREMENTS IN THE SPECIFICATION.

* PARAGRAPH 3.8.3 FLOOD AND LOADING LIGHT (EXTERIOR). LINE 6, CHANGE "1500" TO "800" AND,

DELETE ON LINE 7 THE WORD "TRAPEZOIDAL" AND SUBSTITUTE "FLOOD"; CHANGE THE WORD "EQUIVALENT" TO "SIMILAR".

PARAGRAPH 3.8.5 DELETE ENTIRELY AND SUBSTITUTE:

3.8.5 AMBULANCE INTERIOR LIGHTING. THE BASIC INTERIOR AMBULANCE LIGHTING CONFIGURATION SHALL BE DESIGNED TO MINIMIZE ELECTRICAL LOADS AND INCLUDE: A DRIVER'S COMPARTMENT DOME LIGHT, INSTRUMENT PANEL LIGHTS, MASTER SWITCH PANEL AND CONSOLE LIGHT(S). LIGHTING SHALL BE DESIGNED AND LOCATED SO THAT NO GLARE IS REFLECTED INTO THE DRIVER'S EYES OR HIS LINE OF VISION FROM SWITCH CONTROL PANELS OR OTHER AREAS THAT ARE ILLUMINATED WHILE THE VEHICLE IS IN MOTION. THE PATIENT COMPARTMENT DOMELIGHTING (3.8.5.1) SHALL BE SUFFICIENT AT STEPWELL(S) (3.10.12), AND CONTROL PANEL TO BE CLEARLY VISIBLE OR SEPARATELY ILLUMINATED.

PAGE 20

* PARAGRAPH 3.9.6.1 DELETE ENTIRELY AND SUBSTITUTE:

3.9.6.1 OVERRIDE FRONT BUMPER GUARD. WHEN SPECIFIED (SEE 3.15.3, ITEM 21), A HIGHRISE HEAVY-DUTY GRILLE GUARD SHALL BE FURNISHED TO PROTECT THE VEHICLE GRILLE, RADIATOR, AND AIR CONDITIONER CONDENSER. THE HEAVY-DUTY GRILLE GUARD SHALL BE CUSTOM FIT TO THE FRONT BUMPER AND BOLTED TO THE VEHICLE FRAME. THE GRILLE GUARD SHALL BE OF ALL WELDED STEEL CONSTRUCTION WITH NOT LESS THAN 3/8-INCH THICK SIDE PLATES AND TWO HORIZONTAL TWO-INCH DIAMETER TUBE CROSSMEMBERS. THE GRILLE GUARD SHALL BE OF A HEIGHT TO EXTEND FROM THE BOTTOM EDGE OF THE FRONT BUMPER TO NOT LESS THAN EIGHT INCHES ABOVE THE TOP EDGE. UNLESS OTHERWISE SPECIFIED, THE GRILLE GUARD SHALL BE CHROME PLATED OR PAINTED TO MATCH THE VEHICLE EXTERIOR COLOR.

PAGE 21

PARAGRAPH 3.10.2 DELETE ENTIRELY AND SUBSTITUTE:

3.10.2 CAB AND BODY ACCESS BETWEEN COMPARTMENTS, TYPE 1. THE AMBULANCE AND BODY BULKHEADS SHALL HAVE AN ALIGNED WINDOW OPENING OF AT LEAST 150 SQUARE INCHES FOR VISUAL AND VOICE CHECK OF CONDITIONS IN THE PATIENT'S COMPARTMENT. THE WINDOW OPENING SHALL BE AN ADJUSTABLE, TRANSPARENT, SHATTERPROOF PANEL TREATED OR LOCATED IN THE BULKHEAD(S) TO PREVENT INTERFERRING WITH THE DRIVER'S NIGHT VISION (SEE 3.9.9 AND 3.10.14).

* TABLE II, STYLE 5 -- STANDARD ARMY AND NATO LITTERS (WITH POLES), CORRECT THE DIMENSIONS TO READ: "LENGTH TO 90 (+0, -1/4)," WIDTH TO "23 (+6/10, -3/4)."

PARAGRAPH 3.10.4 DELETE THE THIRD PARAGRAPH "WIDTH", AND SUBSTITUTE:

"WIDTH: THE WIDTH OF THE COMPARTMENT, AFTER INSTALLATION OF THE CABINETS SHALL PROVIDE 18 INCHES ± 6 INCHES OF CLEAR AISLE WALKWAY BETWEEN THE SECURED PRIMARY COT AND THE SQUAD BENCH OR COT."

PAGE 22

PARAGRAPH 3.10.6 DELETE ENTIRELY AND SUBSTITUTE:

3.10.6 AMBULANCE BODY STRUCTURE. ALL PARTS OF THE AMBULANCE BODY AND ATTACHMENTS SHALL BE FASTENED WITH RUST-RESISTANT FASTENERS IN A MANNER WHICH WILL PRECLUDE LOOSENING. CABINETS, BENCHES, PARTITIONS, OXYGEN CYLINDER HOLDERS, GUIDE RAILS, AND COT HOLDERS SHALL BE ATTACHED TO METAL TAPPING PLATES AND/OR FRAMING WELDED TO THE BODY STRUCTURE. THESE COMPONENTS SHALL BE FASTENED BY WELDING, BOLTING, OR USING TAPERED TAPPING SCREWS, AT LEAST ON 24 INCH CENTERS OR LESS AS APPLICABLE TO THE COMPONENT BEING INSTALLED. SELF-TAPPING WOOD/METAL SCREWS OR NAILS SHALL NOT BE USED IN ASSEMBLING THE AMBULANCE EXCEPT FOR LIGHT TRIM PANELS AND WOOD FLOORING.

VEHICLES FURNISHED WITH FIBERGLASS/PLASTIC EXTERIOR ROOF PANEL SHALL HAVE THE CENTER SECTION REINFORCED WITH METAL WIRE SCREENING (SEE 3.14.3 FOR A RADIO ANTENNA GROUND PLANE). AMBULANCE BODIES WITH AN EXTENDED ROOF SHALL HAVE THE ROOF STRUCTURAL MEMBERS PERMANENTLY FASTENED TO STRUCTURAL MEMBERS OF THE BODY (WELDED, BOLTED, AND SEALED) TO PREVENT SEPARATION IN AN ACCIDENT. DRIP RAIL(S) SHALL BE PROVIDED OVER DOORS OF TYPE I AND III OR AROUND THE ENTIRE MODULE UNIT AND HAVE DRAIN POINTS AT EACH CORNER. BODY SKIRT(S) SHALL NOT EXTEND MORE THAN 3 INCHES BELOW THE VEHICLE CAB/BODY. ON TYPE I AND III BODIES, WHEN SPECIFIED (SEE 3.15.3 - 18), A MINIMUM 1X2 INCH PROTECTIVE RUBRAIL ON THE RIGHT AND LEFT SIDES LOCATED IN THE LOWER THIRD SECTION OF THE BODY SHALL BE PROVIDED. THE BODY, ROOF, AND PANEL JOINTS SHALL BE WATERTIGHT. ALL OPENINGS BETWEEN THE CHASSIS-BODY AND OCCUPANT CARRYING COMPARTMENTS DUE TO ALTERATION OR CONSTRUCTION SHALL BE SEALED, INCLUDING THE BULKHEAD SPACE BETWEEN CAB AND BODY OF TYPE I AND III (SEE 3.9.9).

* PARAGRAPH 3.10.8 DOORS. AFTER THE LAST SENTENCE, ADD:

"THE INTERIOR OF THE UPPER DOOR FRAME(S) SHALL BE PADDED TO PREVENT HEAD INJURY TO PERSONNEL. TWO RED REFLECTORS OF THREE-INCH MINIMUM DIAMETER SHALL BE INSTALLED, ONE ON THE INTERIOR SURFACE OF EACH SIDE OR TOP HINGED REAR DOOR. THE REFLECTORS SHALL BE SO POSITIONED AS TO PROVIDE MAXIMUM VISIBILITY WHEN THE DOORS ARE IN THE FULLY OPEN POSITION. AT THE MANUFACTURER'S OPTION, REFLECTIVE TAPE, DARK RED, CONFORMING TO L-S-300, TYPE I, CLASS 3, REFLECTIVITY 1, MAY BE FURNISHED. THE TAPE SHALL BE FOUR INCHES WIDE AND SHALL EXTEND THE FULL WIDTH OF EACH REAR DOOR PANEL.

PAGE 23

PARAGRAPH 3.10.9 DELETE ENTIRELY AND SUBSTITUTE:

3.10.9 DOOR LATCHES, HINGES, AND HARDWARE. DOOR LATCHES, HINGES, AND HARDWARE FURNISHED BY CHASSIS MANUFACTURERS 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 OPENING AND CLOSING. A MINIMUM 6-INCH 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, EVEN IF KEY LOCKED, AND OUTSIDE OF THE BODY, WITH ONE EXTERNAL OPERATED LOCK WITH KEY PER DOOR OPENING SHALL BE PROVIDED. HARDWARE SHALL BE CHROME PLATED, STAINLESS STEEL, OR ANODIZED ALUMINUM. INSIDE DOOR HANDLES SHALL BE DESIGNED AND PLACED SO THEY CANNOT BE OPERATED (OPENING A DOOR) WHEN ACCIDENTALLY HIT OR USED AS A GRAB HANDLE. AMBULANCE BODY, SIDE AND REAR DOOR HARDWARE INSTALLED BY THE AMBULANCE BODY MANUFACTURER SHALL BE TESTED TO PROVE INSTALLATION MEETS OR EXCEEDS THE REQUIREMENTS OF AMD STANDARD 002 - BODY AND DOOR RETENTION COMPONENTS TESTS.

PARAGRAPH 3.10.15 DELETE ENTIRELY THE PORTION ON THIS PAGE AND SUBSTITUTE:

3.10.15 PARTITION FOR TYPE II AND III VEHICLES. A FULL HEIGHT AND WIDTH PARTITION OR BULKHEAD (WITH OR WITHOUT COMPARTMENTS) HAVING ROLLBAR CHARACTERISTICS AND AN OPENING WITH A DOOR, SHALL BE PLACED BETWEEN THE DRIVER AND PATIENT'S COMPARTMENT. THIS PARTITION SHALL BE LOCATED DIRECTLY BEHIND THE DRIVER AND COMPANION SEATS WHEN IN THE...

PAGE 24

FIRST PARAGRAPH (3.10.15 CONTINUED) DELETE ENTIRELY AND SUBSTITUTE:

"REARMOST POSITION. THE PARTITION SHALL BE SECURED ON THE SIDES, CEILING, AND FLOOR, BY WELDING OR BOLTING TO TAPPING PLATES. A PARTITION OPENING AT LEAST 17 INCHES WIDE AND 46 INCHES HIGH SHALL PROVIDE AN AISLE BETWEEN THE COMPARTMENTS. THE DOOR SHALL HAVE AT LEAST A 150 SQUARE INCH TRANSPARENT SHATTERPROOF VIEWING PANEL IN THE CENTER SECTION AT THE DRIVER'S EYE LEVEL. THE DOOR SHALL BE SECURABLE WITH A SELF-LATCHING DEVICE IN THE OPEN AND CLOSED POSITIONS FROM THE DRIVER'S SIDE (SEE 3.10.2)."

PAGE 26

PARAGRAPH 3.11.3 DELETE ENTIRELY AND SUBSTITUTE:

3.11.3 STORAGE 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 SHATTERPROOF TRANSPARENT SLIDING DOORS PROVIDED WITH A FINGER PULL OPENING OR RECESSED METAL CUPS OR EQUAL. STORAGE COMPARTMENTS SHALL BE DIVIDED INTO SECTIONS, SHELVES SHALL BE ADJUSTABLE, DRAWERS SHALL BE MARINE STYLE SLIDE OR TILT, AND ALL SHALL BE REMOVABLE. CABINET COMPARTMENT DOORS AND DRAWERS, SLIDING OR HINGED, SHALL AUTOMATICALLY LATCH OR BE FITTED WITH FRICTION HOLDING DEVICES WHEN IN A CLOSED POSITION. SIDE CABINET SHELVES SHALL BE NO MORE THAN 12 INCHES IN DEPTH WHEN LOCATED ABOVE THE VEHICLE BELT LEVEL. STORAGE COMPARTMENTS, CABINETS, AND SUPPORT EQUIPMENT AREA INTERIOR SURFACES SHALL BE FINISHED IN ACCORDANCE WITH 3.10.17. CABINETS SHALL BE FIRMLY ANCHORED (BOLTED OR WELDED) TO TAPPING PLATES OF

THE BODY STRUCTURE (3.10.6). TOPS OF THE CABINETS AND SHELVES SHALL BE BORDERED OR SURROUNDED BY A LIP OF NOT LESS THAN 1/2 INCH IN HEIGHT. STORAGE FOR THE MAIN OXYGEN CYLINDER (SEE 3.12.1) SHALL BE ACCESSIBLE FOR REPLACEMENT FROM AN OUTSIDE POSITION. THE OXYGEN COMPARTMENT SHALL BE PROVIDED WITH AT LEAST A NINE (9) SQUARE INCH LOUVERED DEVICE LOCATED NEAR OR AT THE TOP OF THE COMPARTMENT, PERMITTING ANY LEAKING OXYGEN GAS TO DISSIPATE/VENT TO THE OUTSIDE OF THE AMBULANCE. OXYGEN CYLINDER COMPARTMENT SHALL NOT BE UTILIZED FOR STORAGE OF ANY OTHER EQUIPMENT. ANY WIRING AND ELECTRICAL DEVICES WITHIN THIS COMPARTMENT SHALL COMPLY TO 3.7.2. OXYGEN CYLINDER(S) SHALL BE MOUNTED WITH A RESTRAINING DEVICE(S), AS REQUIRED FOR THE CRASHWORTHINESS TESTS OF AMD STANDARD 003, OXYGEN TANK RETENTION SYSTEM.

PARAGRAPH 3.11.4 DELETE LINES 13, 14, 15, AND SUBSTITUTE:

* "SQUAD BENCH OR WHEELED COT BENCH SHALL BE FURNISHED WITH AT LEAST THREE (3) SETS OF SAFETY BELTS FOR SEATED OCCUPANTS, AND TO RESTRAIN STYLE 3 STRETCHER WHEN POSITIONED ON THE BENCH. SEATBELTS SHALL COMPLY TO FMVSS 209. THE ANCHORAGES FOR THE SIDE FACING SEATBELT ASSEMBLY SHALL WITHSTAND A MINIMUM OF 2,500 POUND FORCE WHEN TESTED IN ACCORDANCE WITH FMVSS 210-S5.2."

PAGE 27

PARAGRAPH 3.11.9 DELETE ENTIRELY AND SUBSTITUTE:

3.11.9 IV HOLDERS FOR INTRAVENOUS FLUID CONTAINERS. TWO NEAR FLUSH STYLE, IV CEILING HOLDERS OR HOOKS WITH STRAPPING DEVICE TO TIE AND CONTROL IV BAGS/BOTTLES SHALL BE PROVIDED. THE CEILING HOLDERS SHALL BE LOCATED ADJACENT TO THE SIDE WALL, AT THE HEAD OF THE PRIMARY PATIENT AND ONE AT THE HEAD OF THE SECONDARY PATIENT'S COT (SQUAD BENCH). WHEN SPECIFIED IN 3.15.4, CODE M2, A DETACHABLE TYPE, RIGID TELESCOPING IV POLE AND HOLDER, WITH A 52 INCH MINIMUM HEIGHT, WHEN EXTENDED, SHALL BE PROVIDED THE STYLE 1 COT. IT SHALL BE MOUNTED ON THE LEFT SIDE AT THE FRONT END OF THE COT.

PAGE 28

PARAGRAPH 3.12.1.1 LINE 6, DELETE THE FOLLOWING:

* "A MAXIMUM FLOW RATE OF 300 LITERS PER MINUTE (LPM) WITH A FULL TANK AND"

PAGE 30

PARAGRAPH 3.13.1 AFTER THE LAST SENTENCE, ADD:

"CONNECTING HOSES FOR THE HEATING AND AIR CONDITIONING SYSTEMS SHALL BE SUPPORTED AT LEAST EVERY 12 INCHES BY RUBBER INSULATED METAL CLAMPING DEVICES."

PARAGRAPH 3.13.4 AND 3.13.5 FOURTH LINE DOWN, DELETE "(FLOOR TO CEILING)".

PAGE 36

PARAGRAPH 3.17 DELETE ENTIRELY AND SUBSTITUTE:

* 3.17 UNDERCOATING. UNLESS THE AMBULANCE IS RUSTPROOFED, THE VEHICLE SHALL BE UNDERCOATED FOR SOUND DEADENING, CORROSION, AND STONE DAMAGE PROTECTION. A COMMERCIAL, SANDLESS PETROLEUM BASE UNDERCOATING MATERIAL SHALL BE APPLIED TO THE UNDERBODY AND UNDER CHASSIS SHEET METAL SURFACES TO A THICKNESS OF 1/16 TO 1/8 INCH - EXCEPT TO THE DRIVE SHAFTS, DRAIN HOLES, LUBRICATION POINTS, ENGINE CRANKCASE, HEAVY CASTINGS, SUSPENSION COMPONENTS, HEAT SHIELDS, HEAT DIFFUSING DEVICES, CATALYTIC CONVERTERS, AND AREAS 10 INCHES OR LESS FROM THE EXHAUST SYSTEM(S). THESE AREAS SHALL BE KEPT FREE OF COATING MATERIAL. CHASSIS FRAME, UNDERSIDE OF ENGINE COMPARTMENT HOOD, AND UNDERBODY SURFACES IN EXCESS OF 1/8 INCH THICKNESS, OR THAT ARE INACCESSIBLE WITHOUT REMOVING VEHICLE FUEL TANK(S) OR OTHER MAJOR COMPONENTS SHALL NOT REQUIRE UNDERCOATING.

PARAGRAPH 3.18, SECOND LINE, DELETE "MIL-STD-1223," AND SUBSTITUTE "FED. STD. NO. 297."

PAGE 40

PARAGRAPH 4.3.1 SECOND LINE, CHANGE "JANUARY 1, 1981" TO "JULY 1, 1981".

PAGE 41

PARAGRAPH 4.4.2 LINE "H" - CHANGE TO READ:

"ELECTROMAGNETIC RADIATION TESTS. TYPE APPROVAL ACCEPTABLE, (SEE 3.7.12)"

PAGE 43

PARAGRAPH 6.2 ORDERING DATA, ITEM (G) WHEELS, AFTER: "DESIRED", DELETE: "IF TYPE I".

PAGE 47

PARAGRAPH 6.9 DELETE ENTIRELY AND SUBSTITUTE:

* 6.9 CHANGES AND AMENDMENTS. WHEN A USING AGENCY AND PURCHASER CONSIDER THAT THIS SPECIFICATION REQUIRES REVISION, A WRITTEN REQUEST FOR CHANGE OR ADDITIONS TO THE DOCUMENT SUPPORTED BY ADEQUATE JUSTIFICATION SHALL BE SENT TO THE GENERAL SERVICES ADMINISTRATION, OFFICE OF FEDERAL SUPPLY AND SERVICES, AUTOMOTIVE COMMODITY CENTER (FAE), WASHINGTON, DC 20406, FOR APPROPRIATE ACTION. THE AGENCY WILL BE INFORMED OF ACTION TAKEN. NEW AND REVISED INFORMATION REGARDING THIS SPECIFICATION MAY BE ISSUED FROM TIME TO TIME UNDER AN AMENDMENT TO THE FEDERAL SPECIFICATION. THESE AMENDMENTS ARE IDENTIFIED BY THE SAME NUMBER AND TITLE AS THE DOCUMENT AND ARE ON GREEN PAPER. AMENDMENTS SHOULD BE RETAINED UNTIL SUCH TIME AS THE ENTIRE DOCUMENT IS REVISED.

* DELETE COORDINATION ACTIVITIES AND SUBSTITUTE THE FOLLOWING:

MILITARY COORDINATION ACTIVITY:
ARMY - AT

ACTIVITIES:

AIR FORCE - 84-99
ARMY - AT-EL-CR-ER-MD
NAVY - YD-MC

CUSTODIAN & PREPARING ACTIVITY:
GSA-FSS-FAE

CIVIL AGENCY ACTIVITIES:

USDA - APHIS
INTERIOR - BIA
STATE DEPARTMENT - AID
DOT - NHTSA-EMS
DOE
HEW-EMS
VA-DM-S
DC GOVERNMENT

PAGE 58

* AFTER PAGE 58, ADD: APPENDIX, PAGES NUMBERED 59 THROUGH 75.

NOTE: THE MARGINS OF THIS AMENDMENT ARE MARKED WITH AN ASTERISK (*) TO INDICATE WHERE CHANGES FROM THE PREVIOUS AMENDMENT WERE MADE. THIS WAS DONE AS A CONVENIENCE ONLY AND THE GOVERNMENT ASSUMES NO LIABILITY WHATSOEVER FOR ANY INACCURACIES IN THESE NOTATIONS. BIDDERS AND CONTRACTORS ARE CAUTIONED TO EVALUATE THE REQUIREMENTS OF THIS DOCUMENT BASED ON THE ENTIRE CONTENT IRRESPECTIVE OF THE MARGINAL NOTATIONS AND RELATIONSHIP TO THE LAST PREVIOUS AMENDMENT.

APPENDIX

SPECIFICATION FOR MILITARY AMBULANCE

EMERGENCY MEDICAL CARE SURFACE VEHICLE

10. SCOPE AND CLASSIFICATION

10.1 SCOPE. THIS APPENDIX IS AN EXTENSION OF THE REFERENCED DOCUMENT, INCLUDING AMENDMENTS IF ANY, AND DETAILS THE MILITARY REQUIREMENTS FOR THE EMERGENCY AMBULANCE. TO SPECIFY, FOLLOW THE "ORDERING DATA" 60.2 (PAGE 71).

10.2 CLASSIFICATION. THIS APPENDIX COVERS THE FOLLOWING CLASSIFICATION AND SELECTION OF MILITARY AMBULANCES (TO SPECIFY, SEE 60.2).

TYPE II M - STANDARD VAN, FORWARD CONTROL (FC) INTEGRAL CAB-BODY, MILITARY EMERGENCY AMBULANCE (3.1.3 AND FIGURE 2).

CLASS 1 - TWO REAR WHEEL DRIVEN (4X2).

CLASS 2 - FOUR WHEEL DRIVEN (4X4).

FLOOR PLAN AA - (ARMY USAGE 30.1.2).

FLOOR PLAN AN - (NAVY USAGE 30.1.2).

20. APPLICABLE DOCUMENTS

20.1 UNLESS OTHERWISE SPECIFIED, THE REFERENCED DOCUMENTS OF SECTION 2 OF THE SPECIFICATION SHALL APPLY.

30. REQUIREMENTS

30.1 GENERAL REQUIREMENT. WHEN THIS APPENDIX IS SPECIFIED, IT SHALL AMEND SOME OF THE REQUIREMENTS OF THE REFERENCE DOCUMENT. IT CONTAINS DETAILED DESCRIPTION OF DEVIATIONS, ADDITIONS, SUBSTITUTIONS AND SERVICES WHICH SHALL BE PROVIDED AS SPECIFIED. IN THE EVENT OF A CONFLICT BETWEEN SPECIFICATIONS, THOSE HEREIN (APPENDIX) SHALL TAKE PRECEDENCE. THE AMBULANCE AND COMPONENT ITEMS AUTHENTICALLY CERTIFIED FOR TYPE II AMBULANCE, NEED NOT BE RECERTIFIED IF MODIFIED TO COMPLY TO THE (APPENDIX) MILITARY REQUIREMENTS IN ORDER TO DISPLAY THE CERTIFICATION "STAR OF LIFE" SYMBOL.

30.1.1 TYPE II M AMBULANCE. EXCEPT AS OTHERWISE SPECIFIED HEREIN, THIS AMBULANCE SHALL CONFORM TO 3.1.3 FOR THE CLASS SELECTED.

THE CABINETS, BENCH STORAGE COMPARTMENTS, AND PARTITION SHALL BE CONSTRUCTED OF MARINE GRADE PLYWOOD CONFORMING TO CLASS 1 OF MIL-P-18066, OR MEDIUM DENSITY PRESSED WOOD, WITH PRESSURE BONDED LAMINATE ON BOTH FACES, WITH MATERIAL THICKNESS OF NOT LESS THAN 5/8 INCHES, EXCEPT FOR BACKS AND SHELVES. THE INTERIOR OF THE BODY SIDES AND DOORS SHALL BE LINED WITH WASHABLE HIGH STRENGTH FORMICA OR MARLITE PANELS OR AN APPROVED EQUIVALENT. ALL EXPOSED EDGES OF CABINETS, BENCH STORAGE COMPARTMENTS, AND PARTITIONS THAT ARE ROUGH OR HAVE GAPS SHALL BE PROVIDED WITH BRIGHT FINISH, CORROSION-RESISTANT METAL TRIM. CABINETS AND BENCH COMPARTMENTS WITH LITTER AND COT HOLDER ATTACHMENTS SHALL BE REINFORCED TO WITHSTAND SUDDEN STRESSES IMPOSED BY THE LOADED COTS AND LITTERS DURING SUDDEN STOPS. REINFORCEMENTS SHALL INCLUDE METAL ANGLE BRACKETS BETWEEN THE SIDES OF THE CABINETS AND COMPARTMENTS AND THE FLOOR. THE PARTITION OR BULKHEAD SHALL BE WITHOUT WALK-THRU OPENING, BUT SHALL BE FURNISHED IN THE CENTER SECTION A SLIDING LAMINATED GREEN TINTED SAFETY GLASS OR 1/4 INCH PLEXIGLASS TO ALLOW THE DRIVER TO VIEW THE PATIENT'S COMPARTMENT AND PERMIT VOICE COMMUNICATION BETWEEN COMPARTMENTS. THE SLIDING PANEL SHALL BE NOT LESS THAN 40 INCHES IN LENGTH AND 12 INCHES IN HEIGHT. THE SLIDING WINDOW PANEL SHALL BE PROVIDED WITH A FINGER PULL OPENING WITH RECESSED METAL CUPS. THE PARTITION WINDOW FRAME SHALL BE APPROXIMATELY FLUSH WITH THE PARTITION TO PRECLUDE HEAD INJURY.

30.1.2 Floor Plans for Type II M. The ambulance shall be provided with the following patient and EMT (attendant) loading accommodations (modifies 3.1.5, Plan A):

Plan AA - Squad bench, storage cabinets and equipment arrangement for ARMY usage (see appendix figures 1, 2, 5, 6, and 7) loading (A) through (D) below, and one (1) seated attendant.

Plan AN - Squad bench, storage cabinets and equipment arrangement for NAVY usage (see appendix figures 3 and 4) loading (A) through (D) (below), and two (2) seated attendants.

(A) One patient in a Navy stokes litter (style 4) on the floor and one patient in a Navy stokes litter (style 4) on the curbside bench
(B) One patient on an elevating cot (style 1) on the floor and one patient in a Navy stokes litter (style 4) on the curbside bench
(C) One patient on an elevating cot (style 1) on the floor and four seated patients on the curbside bench
(D) One patient on an elevating cot on the floor and one patient in a NATO litter (style 5) on the curbside bench

(Dimensions of Army and NATO litter: L 90 (+0, -1/4) in; W 23 (+6/10, -3/4) in; Height 6 3/4 (+0) in.

(Patient weight is computed at 175 pounds each.)

30.2 Vehicle Operation, Performance and Physical Characteristics.

30.2.1 Vehicle Performance. Except as otherwise specified, the basic specification requirements of part 3.4 and 3.5 shall be provided.

30.2.2 Speed. The ambulance shall be capable of 70 mph speed, when tested in accordance to 3.4.6.

30.2.3 Payload Allowance. Minimum payload of 1400 pounds, in lieu of 1000 pounds specified in 3.5.2 shall be provided. (Compute occupant weight at 175 pounds each.)

30.3 Chassis, Power Unit and Components.

30.3.1 Chassis Components. Except as otherwise specified shall comply to 3.6 to 3.7 of the specification.

For the purposes of establishing minimum component capacities, the capacity of axles, springs, and tires shall be at least equal to the load imposed at the ground, with the complete vehicle with a full compliment of fuel and lubricants and loaded with full specified payload.

30.3.2 Power Plant Heaters. When specified (see 60.2) in lieu of power plant heaters of 3.6.3.2.1, the supplier shall provide the following coolant and battery heaters. Heaters shall operate on 115-volt alternating current (AC), unless otherwise specified, these 115 VAC power plant heater(s) shall be switched and connected to the vehicle's 115 VAC system (see 3.7.8 and figure 6) so that it can only be energized from utility power. When 115 VAC utility power is not furnished the heaters shall be wired through a junction block to a single, three-pronged (male), weatherproof, slave receptacle for receiving external power and grounding the vehicle. A three-wire connecting cable, 25 feet long and of adequate line capacity to supply power for all heater units simultaneously, shall be furnished. The connecting cable shall include a matching female connector at the vehicle end and a standard three-pronged (two power plus one ground) male connector at the other end. Electrical apparatus shall conform to Federal Motor Carrier Safety Regulation 393.77 (c)(7). Electrical insulation of the connecting cable shall withstand normal operating stresses in low ambient air temperatures (down to minus 60 F) without cracking or loss of dielectric capacity. All heater lead wires shall be installed without interfering with vehicle component operation, and without loose, excess wire. A carrier for the connecting cable shall be mounted within the vehicle and shall provide positive cable retention during vehicle operation. Heaters shall be furnished as follows:

(A) COOLANT HEATER, 1,500-WATT MINIMUM RATING, SHALL BE INSTALLED IN THE ENGINE BLOCK OR LOWER, COOLANT, INLET HOSE. AN ENGINE THERMOSTAT WITH AN OPERATING RANGE OF 170 F TO 195 F SHALL BE INSTALLED.

(B) BATTERY HEATER SHALL HAVE A CAPACITY ADEQUATE TO MAINTAIN THE BATTERY ELECTROLYTE AT A TEMPERATURE OF NOT LESS THAN 10 F DURING VEHICLE EXPOSURE IN AMBIENT AIR TEMPERATURES AS LOW AS MINUS 60 F, AND SHALL EMBODY A THERMOSTAT TO LIMIT THE TEMPERATURE OF ELECTROLYTE TO NOT MORE THAN 80 F.

30.3.3 GASOLINE ENGINE. TYPE II M AMBULANCE SHALL BE V8 TYPE PER 3.6.3.3.

30.4 ELECTRICAL SYSTEM AND COMPONENTS.

30.4.1 ELECTRICAL SYSTEMS. UNLESS OTHERWISE SPECIFIED THE ELECTRICAL SYSTEMS SHALL COMPLY TO 3.7 THRU 3.8 OF THE SPECIFICATION, EXCEPT 3.7.8 TO 3.7.8.3 (115VAC) IF FLOOR PLAN AN (NAVY AMBULANCE UNIT NOT REQUIRED).

30.5 LIGHTING, AMBULANCE EXTERIOR AND INTERIOR.

30.5.1 LIGHTING SYSTEMS AND COMPONENTS. EXCEPT AS MODIFIED HEREIN OR ELSEWHERE SHALL COMPLY TO 3.8.

30.5.2 AMBULANCE LOW MOUNT WARNING LIGHTS (3.8.2). THESE WARNING LIGHTS SHALL BE MOUNTED BEHIND THE OVERRIDE BUMPER (SEE 30.6.2) IN THE VICINITY OF THE VEHICLE FRONT GRILLE. THE LIGHTS SHALL BE RED, EXCEPT FOR VEHICLES DESTINED FOR EUROPE THE LIGHTS SHALL BE BLUE. THE WARNING LIGHTS SHALL BE INSTALLED WITH THE CENTERLINE OF THE LIGHTS, AS CLOSE AS PRACTICAL, ON A HORIZONTAL PLANE THROUGH THE CENTERLINE OF THE VEHICLE FRONT HEADLIGHTS.

30.5.3 AMBULANCE EMERGENCY WARNING LIGHTS. WHEN SPECIFIED (SEE 60.2) THE AMBULANCE(S) DESTINED FOR EUROPE SHALL HAVE ALL THE RED (COLOR) WARNING LIGHTS OF 3.8.2, IN BLUE COLOR.

30.5.4 REMOVAL OF LIGHTS FOR SHIPMENT. AT THE OPTION OF THE MANUFACTURER OR WHEN SPECIFIED (SEE 60.2), THE WARNING LIGHT, SPOTLIGHT(S), AND FLOODLIGHT(S) SHALL BE REMOVED FOR SHIPMENT WHERE IT WILL RESULT IN A REDUCTION IN OVERALL VEHICLE SHIPPING CUBAGE. WHEN REMOVED, THE LIGHT(S) SHALL BE STOWED WITHIN THE VEHICLE AND THE ROOF OPENING SHALL BE PROVIDED WITH WEATHERTIGHT COVER(S). PROVISIONS FOR REINSTALLING THE LIGHT(S), INCLUDING ACCESS TO THE LIGHT WIRING AND MOUNTING DEVICES FROM INSIDE THE VEHICLE, SHALL BE PROVIDED.

30.5.5 LIGHTING SWITCH CONTROLS. ADDITIONAL SWITCHES TO CONTROL THE FLOODLIGHTS SHALL BE PROVIDED AT THE REAR DOOR.

30.5.6 TWO SPOTLIGHTS (3.8.4). WHEN SPECIFIED (SEE 60.2), TWO SPOTLIGHTS SHALL BE FURNISHED IN LIEU OF A SINGLE SPOTLIGHT, MOUNTED SO THAT ONE IS LOCATED FOR CONVENIENT ACCESS BY THE DRIVER, THE OTHER FOR USE BY THE ASSISTANT DRIVER/ATTENDANT. SPOTLIGHTS SHALL HAVE INSIDE CONTROLS, AND SHALL BE MOUNTED THROUGH THE WINDSHIELD HEADER SECTION. INTERIOR CONTROLS SHALL BE LOCATED TO MINIMIZE POSSIBLE SAFETY HAZARD. SPOTLIGHTS SHALL BE MOUNTED SO THAT THEY WILL NOT RESTRICT THE VISIBILITY OF THE WARNING LIGHT.

30.5.7 PATIENTS; COMPARTMENT LIGHTS FOR PLAN AA. (MODIFYING 3.8.5.1). LIGHTING SHALL INCLUDE TWO 120-VOLT, 40-WATT FLUORESCENT LIGHTS WITH INSTANT START AND NOT LESS THAN 48-INCH TUBE LENGTHS. INVERTER BALLAST DEVICES TO PERMIT OPERATION FROM THE 12-VOLT ELECTRICAL SYSTEM SHALL BE FURNISHED. THE FLUORESCENT FIXTURES SHALL HAVE TRANSLUCENT POLYCARBONATE BOTTOM COVERS, READILY REMOVABLE FOR REPLACEMENT OF THE FLUORESCENT TUBES. END CAPS SHALL BE PADDED TO REDUCE THE POSSIBILITY OF INJURY TO PERSONNEL. THE FIXTURES SHALL BE MOUNTED TO PRECLUDE DAMAGE FROM VEHICLE MOTION AND VIBRATION AND SHALL PROJECT NO MORE THAN THREE INCHES BELOW THE CEILING. ONE FLUORESCENT LIGHT SHALL BE MOUNTED SO THAT THE FORWARD END OF THE FIXTURE SHALL BE OVER THE FORWARD END OF THE STYLE 1 AMBULANCE COT WHEN THE COT IS CLAMPED IN THE TRANSPORT POSITION. LATERALLY, IT SHALL BE TO THE STREET (LEFT) SIDE OF THE VEHICLE CENTERLINE, LOCATED TO PROVIDE CLEARANCE FROM THE STREET CABINET TOP TO THE LIGHT OF NINE INCHES, TO PERMIT PLACEMENT AND STORAGE OF ARMY LITTER(S), STYLE 5 ON THE TOP OF THE STREETSIDE CABINET (SEE FIGURES 6 AND 7). THE SECOND FLUORESCENT LIGHT SHALL BE MOUNTED LATERALLY TO THE CURB (RIGHT) SIDE OF THE VEHICLE CENTERLINE OVER THE CURB SIDE BENCH, DIRECTLY IN LINE WITH THE STREET SIDE FLUORESCENT LIGHT. ADDITIONALLY, TWO DOMELIGHTS SHALL BE CEILING MOUNTED, ONE OVER THE CURB SIDE BENCH, APPROXIMATELY TWELVE INCHES TO THE REAR OF THE BENCH FRONT, AND THE SECOND OVER THE STREET SIDE COT, APPROXIMATELY TWELVE INCHES TO THE REAR OF THE COT FRONT. THE DOMELIGHTS SHALL PROTRUDE FROM THE CEILING NOT MORE THAN 1 INCH AND SHALL PROVIDE NOT LESS THAN 40 FOOT-CANDLES AT THE LEVEL OF THE PATIENT(S) HEAD ON A STYLE 5 LITTER ON THE CURBSIDE BENCH AND A STYLE 1 COT ON THE STREETSIDE. SEPARATE SWITCHES SHALL BE PROVIDED FOR THE FLUORESCENT LIGHTS AND THE DOMELIGHTS AT BOTH THE FORWARD AND REAR COMPARTMENT PANELS. THE SWITCHES FOR THE DOMELIGHTS SHALL BE OF THE DIMMER TYPE.

30.5.7.1 PATIENT COMPARTMENT LIGHTING FOR PLAN AN (MODIFYING 3.8.5.1). AT LEAST EIGHT (8) DOME LIGHTS SHALL BE INSTALLED IN THE CEILING OF THE PATIENTS' COMPARTMENT. EACH LAMP SHALL BE OF THE HIGH-LOW INTENSITY TYPE AND SHALL PROVIDE LIGHTING OF NOT LESS THAN 40-FOOT CANDLES AT THE LEVEL OF THE LITTER PATIENT WHEN ON HIGH INTENSITY MODE. DOME LIGHTS SHALL BE RECESSED INTO THE CEILING AND THE LENS SHALL NOT PROTRUDE BELOW CEILING LEVEL MORE THAN ONE INCH. THE DOME LIGHTS SHALL BE INSTALLED IN TWO ROWS OF FOUR EACH WITH THE LEFT ROW DIRECTLY OVER THE STYLE 1 COT AND THE RIGHT ROW AN EQUAL DISTANCE FROM THE ROOF CENTERLINE AS THE LEFT ROW. THE TWO FRONT DOME LIGHTS SHALL BE LOCATED NOT MORE THAN 36 INCHES FROM THE PARTITION AND THE TWO REAR DOME LIGHTS SHALL BE LOCATED APPROXIMATELY 18 INCHES FROM THE REAR DOOR WITH THE TWO REMAINING LIGHTS IN EACH ROW SPACED EVENLY BETWEEN THE FORWARD AND REAR LIGHTS. THE DOME LIGHTS SHALL BE OPERATED BY FOUR SWITCHES LOCATED ON THE PATIENTS' COMPARTMENT SWITCH PANEL AND SHALL BE WIRED AS FOLLOWS (LIGHT NUMBERING SYSTEM IS FROM FRONT TO REAR 1,2,3 AND 4 IN EACH ROW:

(A) ONE SWITCH TO OPERATE LIGHTS 1 AND 2 LEFT.
(B) ONE SWITCH TO OPERATE LIGHTS 1 AND 2 RIGHT.
(C) ONE SWITCH TO OPERATE LIGHTS 3 LEFT AND 3 RIGHT.
(D) ONE SWITCH TO OPERATE LIGHTS 4 LEFT AND 4 RIGHT.

TWO ADDITIONAL SWITCHES SHALL BE PROVIDED ON THE SWITCH PANEL AT THE REAR DOOR:

(A) ONE SWITCH TO OPERATE LIGHTS 1 AND 2 LEFT.
(B) ONE SWITCH TO OPERATE LIGHTS 4 LEFT AND 4 RIGHT.

30.5.7.2 REAR FLOODLIGHT AND STEP LIGHT FOR PLAN AA & AN, (MODIFYING 3.8.3 AND 3.8.5). SIDE FLOODLIGHTS ARE NOT REQUIRED ON THE TYPE IIM AMBULANCE. A FLOODLIGHT SHALL BE MOUNTED TO THE REAR ROOF OF THE BODY, OVER THE REAR DOORS, WHICH PROVIDES LIGHTING AT GROUND LEVEL TO ALL POINTS AT THE REAR OF THE VEHICLE, TWO FEET OR MORE. THE FLOODLIGHT SHALL BE SWIVEL MOUNTED WHICH PROVIDES FOR VERTICAL AND HORIZONTAL ADJUSTMENT. A SWITCH SHALL BE LOCATED AT THE REAR DOOR WHICH ACTIVATES THE LIGHT WHEN DOORS ARE OPENED. A DASH MOUNTED SWITCH SHALL BE PROVIDED TO OVERRIDE THE DOOR SWITCH. TWO REAR BUMPER STEP LIGHTS SHALL BE FURNISHED TO ILLUMINATE THE REAR STEP. A SWITCH WHICH AUTOMATICALLY TURNS ON THE LIGHTS WHEN THE DOORS ARE OPENED SHALL BE FURNISHED.

30.6 CAB-BODY DRIVER COMPARTMENT AND EQUIPMENT.

30.6.1 CAB-BODY PROVISIONS. UNLESS OTHERWISE SPECIFIED, SHALL CONFORM TO 3.9.

30.6.2 Heavy Duty Grille Guard Plans AA and AN (Unless Deleted). A heavy duty grille guard shall be furnished to protect the vehicle grille, radiator, and air conditioner condenser. The heavy duty grille guard shall be custom fit to the front bumper and bolted to the vehicle frame. The grille guard shall be of all welded steel construction with not less than 3/8-inch thick side plates and two horizontal two-inch diameter tube crossmembers. The grille guard shall be of a height to extend from the bottom edge of the front bumper to not less than eight inches above the top edge. The grille guard shall be chrome plated or painted to match the vehicle exterior colors. Guard must not block low mount warning lights. Grill warning lights shall be rearward of the front edge of the bumper guards for the protection of the lights.

30.7 Ambulance Body and Patient Area.

30.7.1 Body Accommodations. Except as modified herein, and unless otherwise specified shall be furnished in accordance to 3.10 to 3.11. In addition, The ambulance body proper and patient compartment shall be sufficient in size to transport occupants as specified in plan AA or AN (see 30.1.2), and accommodate and store all the stretchers, cots, and litters through the range of dimensions specified in table II. The patients' compartment shall accommodate two seated EMT (attendants) for plan AN, and one seated attendant for plan AA, modifying 3.10.3.

30.7.2 Doors (3.10.8). The side door shall be the manufacturer's standard sliding door with safety glass window in upper section.

30.7.3 Door Latches (3.10.9). The rear door shall be furnished with a latch operable from inside and out and with a lock mechanism key type on outside and plunger/button type inside similar to those furnished on forward driver/passenger doors. The door shall at no time be locked in such a manner that it cannot be unlocked from inside patients' compartment.

30.7.4 Floor Covering (3.10.11). No wax vinyl or linoleum shall be provided.

30.7.5 Partition (3.10.15). Shall not have a door opening, in the partition (see 30.1.1).

30.7.6 Interior Surfaces (3.10.17). Patient compartment ceiling inner shell of the roof shall serve as a ceiling of the patients' compartment. The inner shell shall be molded, reinforced fiberglass or acrylonitrile butadiene styrene (ABS) material. The shell shall include built-in, molded recesses for ceiling mounted equipment including lights, vents, support eyes, and IV solution hooks, enabling all items to be retained within the ceiling when not in use, except ceiling lights and IV solution hooks may extend not more than 1/2-inch below vehicle ceiling.

30.8 Storage Compartments and Facilitations.

30.8.1 Patient Compartment Facilities (3.11). Unless otherwise specified (see 60.2) the patient compartment facilities shall comply to that specified below in lieu of 3.11 through 3.11.9, with the exception of applicable requirements of 3.11.1.1; 3.11.3, and 3.11.7.

30.8.2 BENCH AND STORAGE COMPARTMENT (PLAN AA AND AN). THE LONGITUDINAL BENCH WITH UPHOLSTERED SEAT AND SEPARATE BACK SHALL BE MOUNTED ON THE RIGHT (CURBSIDE) OF THE VEHICLE. THE BENCH SHALL BE CAPABLE OF ACCOMMODATING FOUR PASSENGERS WITH A MINIMUM OF 19 INCHES PROVIDED FOR EACH PASSENGER. THE BENCH SEAT SHALL PROVIDE SUPPORT FOR THE STYLE 4 AND 5 LITTERS SPECIFIED IN TABLE II (PAGE 21), AND SHALL HAVE STORAGE SPACE UNDERNEATH. THE BENCH SEAT SHALL BE HINGED AT THE BACK WITH A FULL LENGTH PIANO HINGE OR BUTT HINGES AND SHALL SERVE AS A TOP FOR THE STORAGE COMPARTMENT. BENCH SEAT HINGES SHALL BE ADEQUATE TO ALLOW THE SEAT TO SUPPORT NOT LESS THAN 800-POUND PASSENGER WEIGHT AND TO SUPPORT THE SEAT IN THE UPRIGHT POSITION WITH THE VEHICLE STATIONARY OR IN TRANSIT. THE HINGED SEAT SHALL BE PROVIDED WITH STAY(S) TO SUPPORT THE SEAT WHEN IN THE RAISED POSITION. THE STORAGE COMPARTMENT SHALL RUN THE FULL LENGTH OF THE BENCH AND INTERIOR DIMENSIONS SHALL BE NOT LESS THAN 76 INCHES LONG, 18 INCHES WIDE, AND 14 INCHES HIGH. THE WIDTH OF THE BENCH SEAT SHALL BE NOT LESS THAN 23 AND NOT MORE THAN 24 INCHES. THE STORAGE COMPARTMENT SHALL BE PROVIDED WITH TWO CLEAR 1/4-INCH PLEXIGLASS SLIDING DOORS IN THE SIDE OF THE COMPARTMENT TO PROVIDE MAXIMUM ACCESSIBILITY TO THE COMPARTMENT. A CENTER SUPPORT AT THE FRONT OF THE COMPARTMENT, BETWEEN THE DOORS IS ACCEPTABLE. DOORS SHALL BE PROVIDED WITH RECESSED FINGER PULLS, OPENING WITH RECESSED CUPS, AND SHALL BE POSITIVE LOCKING OR EQUIPPED WITH FRICTION HOLDING DEVICES. HARDWARE, CATCHES, BRACKETS, AND HINGES SHALL BE HEAVY DUTY.

30.8.2.1 BENCH SEAT. THE BENCH SEAT SHALL BE PADDED WITH FLEXIBLE, POLYESTER URETHANE FOAM. THE FOAM SHALL BE NON-ALLERGENIC, FLAME RETARDANT, NON-TOXIC, AND SHALL REJECT MOISTURE AND BODY ODORS. THE DENSITY SHALL BE 2.0 POUNDS PER CUBIC FOOT TO 2.4 POUNDS PER CUBIC FOOT. THE FIRMNESS OF THE FOAM SHALL BE 35 POUNDS TO 70 POUNDS AT A 25 PERCENT DEFLECTION OVER AN AREA OF 50 SQUARE INCHES. THE FOAM PADDING SHALL BE CAPABLE OF WITHSTANDING 100 PERCENT HUMIDITY AND AN AMBIENT TEMPERATURE FROM MINUS 65 F TO PLUS 125 F WITH NO EVIDENCE OF DEFORMATION OR CELL BREAKDOWN. FLEXIBLE LATEX POLYESTER FOAM PADDING IS UNACCEPTABLE. THICKNESS OF THE PADDING SHALL BE TWO INCHES. THE PADDING SHALL BE COVERED WITH A WASHABLE NON-ABSORBENT ARTIFICIAL LEATHER OR VINYL HAVING A NYLON BACKING OF NOT LESS THAN 32 OUNCES PER SQUARE YARD. THE SEAT AND BACKREST SHALL BE DESIGNED SO AS TO NOT REQUIRE REMOVAL OR SHALL NOT HAMPER THE EFFECTIVENESS OF THE VEHICLE WHEN UTILIZED TO TRANSPORT COT OR LITTER PATIENTS.

30.8.3 STRETCHERS, COTS, AND LITTERS. THE VEHICLE SHALL BE CAPABLE OF ACCOMMODATING THE STRETCHERS, COTS, AND LITTERS THROUGH THE RANGE OF DIMENSIONS SPECIFIED IN 3.10.1, TABLE II. WHEN SPECIFIED (SEE 60.2), A STYLE 3 STRETCHER CONFORMING TO FERNO WASHINGTON NUMBER 11 OR EQUIVALENT SHALL BE FURNISHED. STRETCHER SHALL BE OF THE FOLDING TYPE WITH TWO CASTERED WHEELS, TWO LEGS, AND STRAPS FOR HOLDING THE PATIENT IN THE STRETCHER. WHEN SPECIFIED (SEE 60.2), A STYLE 1 COT CONFORMING TO FERNO WASHINGTON MODEL 30 ALL-LEVEL OR EQUIVALENT SHALL BE FURNISHED. COT SHALL INCLUDE FOOT PULLS, HEAD PULL HANDLES, A THREE-INCH THICK POLYESTER MATTRESS WITH A VINYL COATED NYLON FABRIC COVER AND STRAPS FOR HOLDING A PATIENT IN THE COT. THE MATTRESS PAD AND COVER AND THE STRETCHER BOTTOM SHALL BE OF FIRE RETARDANT MATERIAL.

30.8.3.1 STRETCHER AND COT HOLDERS. A QUICK DETACHABLE AND ADJUSTABLE COT HOLDER OF THE ONE PIECE PLUNGER TYPE, FERNO WASHINGTON MODEL 175.5, OR EQUIVALENT, OPERABLE WITH THE STYLE 1 COT (SEE 30.8.3) SHALL BE INSTALLED ON THE STREET SIDE LOWER CABINET OF SECTION THREE. WHEN A STYLE 3 STRETCHER IS SPECIFIED (SEE 30.8.3), POST CUPS AND WHEEL CUPS FOR HOLDING THE STRETCHER ON THE RIGHT-HAND SIDE OF THE FLOOR SHALL BE INSTALLED.

30.8.4 SAFETY STRAPS. THREE TWO-INCH WIDE NYLON SAFETY STRAPS WITH PROPER ANCHORS SHALL BE PROVIDED TO STRAP IN A LITTER PATIENT AT THE CHEST, WAIST, AND KNEES WHEN AN ARMY LITTER IS PLACED ON THE BENCH SEAT OR BENCH LITTER SUPPORT. LITTERS ARE LOADED HEAD FORWARD. EACH STRAP SHALL BE NOT LESS THAN 72 INCHES IN LENGTH. TWO ADDITIONAL STRAPS SHALL BE PROVIDED TO PRECLUDE MOVEMENT OF THE LITTER. IT IS INTENDED THAT THE STRAPS BE APPLIED TO THE EXPOSED LITTER POLE, NEAREST THE VEHICLE CURBSIDE, AT LITTER HEAD AND FOOT. ALL OF THE SAFETY STRAPS AND BUCKLES SHALL BE OF THE AUTOMOTIVE SEAT BELT TYPE AND QUALITY. SAFETY STRAP ATTACHMENT HARDWARE SHALL PRECLUDE UNDUE WEAR OF THE STRAP WEBBING AT THE POINT OF ATTACHMENT. ALL SAFETY STRAPS SHALL BE OF SUFFICIENT LENGTH FOR THE STIPULATED INTENDED USAGE, AND SHALL BE PROVIDED WITH MEANS FOR RAPID ADJUSTMENT.

30.8.5 BACKREST (PLAN AN). FOR VEHICLES FURNISHED IN ACCORDANCE WITH PLAN AN, THE SEAT BACKREST SHALL BE (PERMANENTLY) MOUNTED TO THE CURBSIDE WALL ABOVE THE SEAT FROM THE CURBSIDE DOOR OPENING TO THE CURVE AT THE REAR OF THE BODY. THE BACKREST SHALL BE NOT LESS THAN 12 INCHES IN HEIGHT. THE TOP EDGE OF THE BACKREST SHALL BE NOT LESS THAN 18 INCHES ABOVE THE UNLOADED SEAT CUSHION. THE BACKREST FOAM PADDING SHALL BE IN ACCORDANCE WITH 30.8.2.1.

30.8.6 Combination Backrest/Litter Support Panel (plan AA). For vehicles furnished in accordance with plan AA, a combination backrest/litter support panel shall be furnished, and shall be designed to adequately support a patient on a standard Army litter (see table II) in the "DOWN" position and to provide a bench backrest in the "UP" position. The panel shall be of the hinged type, shall be not less than 63 inches in length, and shall be mounted behind the bench seat on the curbside wall (see appendix figure 1). Two latches shall be furnished to secure the panel in the "UP" position (see appendix figure 2). When in the "UP" position, the panel shall become part of the curbside wall. When in the "DOWN" position, the top section of the panel shall serve as a litter support and shall be furnished with litter skid strips (see 30.8.6.1), and shall extend minimally into the aisle. When in the "UP" position, the outside surface of the panel shall provide a foam-padded backrest conforming to 30.8.2.1. When in the "DOWN" position, the backrest shall lie flush with the top of the bench seat. The backrest shall be centered along the support panel, shall run the full length of the panel, and shall extend not less than 3 inches beyond the rear (back door) end of the panel. The panel shall be designed so as to not require removal or shall not hamper the effectiveness of the vehicle when utilized to transport litter patients.

30.8.6.1 Litter Skid Strips (plan AA). For vehicles furnished in accordance with plan AA, litter skid strips shall be furnished. Two parallel 2 3/4 inch (inside) x 1/2 inch x 1/8 inch stainless steel channels shall be fixed to the top (when in the folded down position) of the combination backrest/litter support panel (see 30.8.6) on 21 1/4 inch ± 1/8 inch centers. The channels shall have a litter stop at the forward end of each channel to prevent movement of the litter stop at the forward end of each channel to prevent movement of the litter during sudden deceleration. Skid strips shall run the length of the bench seat. Channels are for sliding standardized (Army and NATO-STANAG 2040) litters along the litter support. The channel toward the center of the vehicle shall locate the aisle side edge of the litter support legs. The channel toward the curbside of the vehicle shall be located so that its centerline is not less than 2 3/8 inches from the wall.

30.8.7 Back Board Stowage (plan AA and AN). For type II M vehicles, provisions for stowing a long and short back board shall be furnished within the vehicle. For plan AN vehicles, quick release type retaining devices for the back boards shall be so located so that the stowed back boards will not interfere with the function or operation of the ambulance in any manner. The long back board shall be stowed on the curbside under bench top for plan AN and as specified in 30.8.8.2 for plan AA vehicles. The stowage facility for plan AA shall hold the spine boards without rattling or vibration and shall allow ready removal of the spine boards. The long back board maximum size measures 18 inches by 72 inches overall and is fabricated of 3/4-inch plywood with 3/4-inch runners. The short back board maximum size shall measure 18 inches by 34 inches overall, and shall be of 3/4-inch thick plywood and shall be provided when code M12 in 3.15.4 is specified. For plan AA vehicles, the back boards shall be furnished with pull handles at the head end to facilitate removal from the stowage area.

30.8.8 Plan AA. Type II M ambulances furnished in accordance with plan AA shall be further provided with bench, storage cabinets, and equipment as specified in 30.8.8 through 30.8.8.7. Equipment arrangement shall conform generally to appendix figures 5, 6, and 7.

30.8.8.1 Attendant's Seat and Oxygen Storage Cabinet. A rear facing attendant's seat, with hinged seat lid, shall be provided over the streetside end of a compartment for "H" oxygen cylinder storage at the front of the patient compartment. The piano hinged seat shall be approximately 16 inches deep, 22 inches wide, and 18 inches high, and shall be equipped with a seat belt. It shall be located (laterally) so that it can be raised without interference with the streetside cabinets. A backrest, comparable to that for the curbside bench (30.8.4), of appropriate length shall be provided. Stays to support the seat in the raised position shall be provided. The seat and backrest shall be upholstered as specified for the bench (see appendix figure 6).

30.8.8.2 FRONT STORAGE COMPARTMENT ARRANGEMENT. THE STORAGE COMPARTMENT UNDER THE ATTENDANT'S SEAT SHALL RUN THE WIDTH OF THE VEHICLE (TO THE INBOARD EDGE OF THE STEP-WELL, IF ONE IS PROVIDED) AT THE REAR OF THE PARTITION. IT SHALL PROVIDE FOR STORAGE AND CRASHWORTHY RETENTION OF AN "H" OXYGEN CYLINDER AND SHALL PROVIDE SPACE FOR A REGULATOR, INCLUDING GAGE(S), AT THE CURBSIDE END. PROVISION SHALL BE MADE FOR VIEWING OF AND ACCESS TO THE REGULATOR FROM INSIDE THE PATIENT COMPARTMENT WHEN THE SIDE VEHICLE DOOR IS CLOSED, BY MEANS OF A TRANSPARENT PLEXIGLASS SLIDING OR HINGED DOOR IN THE CURBSIDE END OF THE REAR FACE OF THE COMPARTMENT. A PIANO HINGED DOOR SHALL BE PROVIDED IN THE RIGHT (CURBSIDE) END OF THE COMPARTMENT TO FACILITATE THE OXYGEN CYLINDER EXCHANGE AND SERVICING. THE DESIGN SHALL PROVIDE FOR PROTECTION OF THE COMPARTMENT FROM DAMAGE DURING CYLINDER EXCHANGE, AND FOR EASY ACCESS TO THE RESTRAINTS FOR THE CYLINDER. THE OXYGEN TANK RETENTION SYSTEM SHALL CONFORM TO AMD STANDARD 003. A WRENCH FOR CONNECTING AND DISCONNECTING THE REGULATOR AND CYLINDER SHALL BE PROVIDED AND SECURELY STOWED IN A CONVENIENT LOCATION. THE SPACE ABOVE THE CYLINDER AND UNDER THE ATTENDANT'S SEAT SHALL BE CONSTRUCTED TO PROVIDE ADDITIONAL STORAGE. ALONGSIDE THE ATTENDANT'S SEAT, ABOVE THE CYLINDER COMPARTMENT, SHALL BE A STORAGE CABINET WITH SLIDING PLEXIGLASS DOORS (WITH 1 1/4-INCH DIAMETER FINGER HOLES) AND A ONE-INCH LIP TO PREVENT THE CONTENTS FROM SLIDING OUT WHEN DOORS ARE OPEN. THE TOP OF THIS CABINET SHALL BE PROVIDED WITH A 2 1/2-INCH LIP ON THE ENDS AND REARWARD FACING EDGE (OVER THE CABINET DOORS) TO PREVENT EQUIPMENT PLACED ON THE SHELF FROM SLIDING OFF. THE FORWARD EDGE SHALL BE AGAINST THE PARTITION. THIS SHELF SHALL BE NOT LESS THAN THREE INCHES BELOW THE BOTTOM EDGE OF THE PARTITION WINDOW, AND COVERED OR FINISHED FOR EASE OF CLEANING AND FOR RESISTING DAMAGE FROM STORED EQUIPMENT. THE PREFERRED MEANS FOR STOWING TWO SPINE BOARDS (SEE 30.8.7) SHALL BE A COMPARTMENT WHICH WILL PERMIT STANDING THEM ON EDGE, WITH THEIR LONG DIMENSION CROSSWISE OF THE VEHICLE, TO BE PROVIDED BETWEEN THE PARTITION AND THE OXYGEN CYLINDER STORAGE COMPARTMENT, OR IN THE FRONT OF THE PARTITION. ACCESS SHALL BE BY MEANS OF A PIANO HINGED DOOR AT THE CURBSIDE END OF THE COMPARTMENT, TO PERMIT REMOVAL OF THE SPINE BOARDS THROUGH THE PATIENT COMPARTMENT CURBSIDE DOOR. IF THE VEHICLE WIDTH IS INADEQUATE FOR THE PREFERRED CROSSWISE STORAGE OF THE LONG SPINE BOARD OR IF THE PATIENT COMPARTMENT CURBSIDE SLIDING DOOR LOCATION WILL NOT PERMIT CURBSIDE ACCESS, AN ALTERNATIVE LOCATION UNDER THE CURBSIDE BENCH SEAT OR IN A WEATHERPROOF AND SPLASHPROOF FLOOR COMPARTMENT MAY BE USED.

30.8.8.3 STREETSIDE STORAGE CABINETRY AND EQUIPMENT. STORAGE CABINETRY AND EQUIPMENT SHALL BE FURNISHED ON THE STREETSIDE (LEFT SIDE) OF THE PATIENTS' COMPARTMENT, AS DESCRIBED HEREIN. THE CABINETS SHALL CONFORM GENERALLY TO APPENDIX FIGURES 5, 6, AND 7. STORAGE CABINETRY SHALL RUN THE LENGTH OF THE PATIENTS' COMPARTMENT. THE DEPTH OF THE CABINETRY SHALL BE NOT LESS THAN EIGHT INCHES NOR MORE THAN 12 INCHES AS REQUIRED TO ENCASE THE WHEELWELL MEASURED AT FLOOR LEVEL AND SHALL EXTEND VERTICALLY TO A HEIGHT ADEQUATE TO INCORPORATE ALL THE CABINETRY SHOWN IN APPENDIX FIGURES 5, 6, AND 7. ALL SLIDING DOORS SHALL BE 1 1/4-INCH DIAMETER TO PERMIT EASE OF OPENING. ALL SHELVES SHALL BE PROVIDED WITH A 3/4 TO ONE INCH LIP TO PREVENT MATERIAL FROM SLIDING OFF WHILE THE VEHICLE IS IN MOTION AND THE DOORS ARE OPEN. THE CABINET COMPARTMENT DOORS (SLIDING AND HINGED) SHALL BE POSITIVE LOCKING OR FITTED WITH FRICTION HOLDING DEVICES. CHANNELS FOR SLIDING DOORS SHALL BE LINED WITH MATERIAL TO REDUCE RATTLES. THE SPARE WHEEL ASSEMBLY SHALL BE LOCATED IN A SUITABLE LOCATION ON THE EXTERIOR OF THE VEHICLE (SEE 3,6,10).

30.8.8.4 STREETSIDE SECTION 1. THE UPPER PART OF THE FIRST SECTION BEHIND THE PARTITION SHALL BECOME PART OF THE SECTION 2 ACTION WALL. THIS SECTION SHALL PROVIDE A SUITABLE STORAGE SPACE AND SHALL BE FURNISHED WITH MOUNTING BRACKET(S) AND AN ELECTRICAL RECEPTACLE OF THE QUICK-DISCONNECT (NOT SCREW-IN) TYPE FOR THE PORTABLE BATTERY POWERED SUCTION UNIT DESCRIBED IN 30.9.3. BELOW THE TOP OF THE ATTENDANT'S SEAT, THIS SECTION WILL PROVIDE SPACE FOR THE BOTTOM OF THE "H" OXYGEN CYLINDER AND THE END OF THE LONG SPINE BOARD.

30.8.8.5 STREETSIDE SECTION 2. THE SECOND SECTION SHALL BE APPROXIMATELY 24 INCHES WIDE. THE UPPER PORTION OF THIS SECTION SHALL HAVE A BACKING RECESSED SIX TO EIGHT INCHES FROM THE FACE OF SECTION 1 AND SHALL EXTEND FROM A FLOOR LEVEL SHELF OF THE LOWEST CABINET OF SECTION 1 TO THE SAME HEIGHT AS SECTION 1. THE SHELF AT THE BOTTOM OF THIS RECESSED AREA SHALL HAVE A 1 1/2 INCH LIP AT THE OUTER EDGE. A WELL FOUR INCHES IN DIAMETER AND APPROXIMATELY THREE INCHES DEEP SHALL BE PROVIDED IN THE SHELF TO HOLD A SCREW CAP JAR (FSN 6530-00-985-7241). THE WELL SHALL BE LOCATED SO THAT THE JAR IS READILY ACCESSIBLE FOR OXYGEN OUTLETS FREE FOR A PREASSEMBLED OXYGEN BAG, VALVE MASK UNIT (SEE APPENDIX FIGURES 5 AND 7). THE OXYGEN AND SUCTION CONNECTORS (SEE 30.9.1.1 AND 30.9.2.1) SHALL BE MOUNTED ON THE VERTICAL BACK WALL (TOWARD THE STREETSIDE OF THE BODY) OF THIS UPPER PORTION. THE INSTALLATION SHALL BE DESIGNED TO PERMIT ACCESS FOR SERVICING THE VACCUM AND OXYGEN SYSTEMS. THE BOTTOM OF SECTION 2 SHALL HAVE ACCESS DOOR(S) TO PERMIT STORAGE OF EQUIPMENT AND SUPPLIES. DOOR(S) SHALL NOT INTERFERE WITH THE COT HOLDER.

30.8.8.6 STREETSIDE SECTION 3. THE THIRD SECTION SHALL INCLUDE A COMPARTMENT TO THE REAR OF THE WHEELWELL FOR FUTURE STORAGE OF A (STYLE 3) STAIR CHAIR, FERNO WASHINGTON MODEL 40 OR EQUAL, SO DESIGNED THAT THE STAIR CHAIR CAN BE REMOVED WITHOUT REMOVING THE PATIENT ON THE COT FROM THE VEHICLE. CLAMP(S) OR STRAP(S) SHALL BE PROVIDED TO SECURE THE STAIR CHAIR POSITIVELY WHEN NOT IN USE. THIS COMPARTMENT SHALL BE COVERED WITH A SOLID DOOR HINGED FORWARD WITH FULL LENGTH PIANO HINGE, IN A MANNER TO PERMIT SIDE OPENING AND EASY ACCESS TO THE STAIR CHAIR. STORAGE CABINETS, WITH SLIDING PLEXIGLASS DOORS, SHALL BE PROVIDED IN SECTION 3 AS SHOWN IN APPENDIX FIGURE 7. THE BOTTOM OF THE LOWER CABINET(S) SHALL BE AT THE LEVEL OF THE SHELF AT THE BOTTOM OF THE RECESSED AREA OF SECTION 2. BELOW THE SLIDING DOOR CABINETS, A DOOR, HINGED AT THE BOTTOM, SHALL BE PROVIDED TO GIVE ACCESS TO THE SPACE AROUND THE WHEELWELL FOR ADDED STORAGE. BETWEEN THE CABINETRY AND THE ROOF, THERE SHALL BE PROVIDED STORAGE SPACE FOR ONE ARMY LITTER (STYLE 5, TABLE II) EXTENDING FROM THE REAR OF THE VEHICLE FORWARD 95 INCHES, AND EQUIPPED WITH MEANS TO RETAIN THE STYLE 5 LITTER SECURELY DURING VEHICLE MOVEMENT. THE SPACE FORWARD OF THE LITTER STORAGE AREA BETWEEN THE CABINETS OF SECTION 1 AND SECTION 2 AND THE ROOF SHALL BE ENCLOSED AS A CEILING CABINET AND PROVIDED WITH TRANSPARENT SLIDING OR HINGED DOOR(S) AND LIP AS IN OTHER CABINETS (APPENDIX FIGURE 5).

30.8.8.7 I V HOLDERS FOR INTRAVENOUS FLUID CONTAINERS (PLAN AA). IN LIEU OF THE I V HOLDERS IN 3.11.9, THE FOLLOWING SHALL BE FURNISHED: A CEILING MOUNTED TRACK WITH THREE TROLLEY HOOKS FOR SUPPORTING INTRAVENOUS BOTTLES OR BAGS SHALL BE PROVIDED. PROVISIONS FOR LOCKING THE HOOKS IN POSITION ALONG THE TRACK SHALL BE PROVIDED. THE TRACK SHALL BE NOT LESS THAN FIVE FEET LONG, AND SHALL BE ATTACHED TO THE CEILING SO THAT IT IS CENTERED LONGITUDINALLY OVER THE COT WHEN THE COT IS IN THE COT HOLDER. LATERALLY, THE TRACK SHALL BE MOUNTED OVER THE COT, BETWEEN THE LIGHT(S) AND THE GRAB RAIL. TRACK AND ADJUSTABLE HOOKS SHALL BE ARNCO NC100 WITH THREE-INCH HOOKS CEILING MOUNTED CUBICLE TRACK (EXTRUDED ALUMINUM BOX CHANNEL 1 3/8 INCH X 3/4 INCH), NO. 12 ROLLER CARRIERS AND END STOPS, OR EQUAL.

30.8.9 PLAN AN. TYPE II M AMBULANCES FURNISHED IN ACCORDANCE WITH PLAN AN SHALL BE FURTHER PROVIDED WITH THE BENCH, STORAGE CABINETS, AND EQUIPMENT AS SPECIFIED IN 30.8.9 THROUGH 30.8.9.8. EQUIPMENT ARRANGEMENT SHALL CONFORM GENERALLY TO APPENDIX FIGURES 3 AND 4.

30.8.9.1 ATTENDANT'S BENCH. A REAR FACING ATTENDANT'S BENCH WITH A HINGED SEAT LID AND STORAGE COMPARTMENT SHALL BE INSTALLED IN FRONT OF THE PATIENTS' COMPARTMENT AT THE PARTITION. HINGES SHALL BE OF THE HEAVY-DUTY TYPE. THE STORAGE COMPARTMENT SHALL BE APPROXIMATELY 55 INCHES LONG BY 14 INCHES WIDE BY 14 INCHES HIGH. THE HINGED SEAT SHALL BE 16 INCHES DEEP AND OF A LENGTH TO PERMIT RAISING THE SEAT WITHOUT INTERFERENCE WITH THE STORAGE COMPARTMENTS DESCRIBED IN 30.8.9.3. THE COMPARTMENT SHALL BE PROVIDED WITH A SLIDING PLEXIGLASS WINDOW OR HINGED PLEXIGLASS DOOR TO VIEW THE PRESSURE GAGE ON OXYGEN BOTTLES STORED WITHIN AND SHALL BE LARGE ENOUGH TO PERMIT ADJUSTMENT BY THE ATTENDANT. STAYS SHALL BE PROVIDED TO SUPPORT THE SEAT WHEN IN THE RAISED POSITION. THE BACKREST SHALL BE NOT LESS THAN 12 INCHES IN HEIGHT WITH THE TOP EDGE LOCATED DIRECTLY BELOW THE PARTITION WINDOW. THE SEAT AND BACK SHALL BE UPHOLSTERED AS SPECIFIED IN 30.8.2.1.

30.8.9.2 STORAGE COMPARTMENT ARRANGEMENT. THE STORAGE COMPARTMENT UNDER THE ATTENDANT'S BENCH SHALL HAVE PROVISIONS TO FACILITATE THE LOADING, UNLOADING, AND SECURING OF AN "H" SIZE OXYGEN TANK COMPLETE WITH VALVE, PRESSURE REGULATOR, AND ASSOCIATED PIPING. THE MOUNTING AND RESTRAINTS FOR THE OXYGEN CYLINDER SHALL BE CRASHWORTHY UNDER ALL CONDITIONS. THE OXYGEN TANK RETENTION SYSTEM SHALL CONFORM TO AMD STANDARD 003. A HINGED OPENING SHALL BE PROVIDED AT THE RIGHT END (CURBSIDE) OF THE STORAGE COMPARTMENT TO FACILITATE OXYGEN TANK EXCHANGE AND SERVICING. THE STORAGE COMPARTMENT SHALL BE PROVIDED WITH MEANS TO PROTECT THE COMPARTMENT FROM DAMAGE DURING CYLINDER EXCHANGE OPERATIONS.

30.8.9.3 STREETSIDE STORAGE CABINETRY AND EQUIPMENT. STORAGE CABINETRY AND EQUIPMENT SHALL BE FURNISHED ON THE STREETSIDE (LEFT SIDE) OF THE PATIENTS' COMPARTMENT, AS DESCRIBED HEREIN. THE CABINETS SHALL CONFORM GENERALLY TO APPENDIX FIGURES 3 AND 4. MATERIALS, CONSTRUCTION, AND TRIM SHALL CONFORM TO 3.10.17 AND 3.11.3. STORAGE CABINETRY SHALL RUN THE LENGTH OF THE PATIENTS' COMPARTMENT. THE DEPTH OF THE CABINETRY, MEASURED AT THE FLOOR LEVEL, SHALL BE NOT LESS THAN EIGHT INCHES AND NOT MORE THAN THE DEPTH REQUIRED TO ENCASE THE WHEEL WELL. THE CABINET FACING SHALL EXTEND VERTICALLY TO A HEIGHT ADEQUATE TO INCORPORATE ALL THE CABINETRY SHOWN IN APPENDIX FIGURES 3 AND 4. ALL SLIDING DOORS SHALL BE 1/4 INCH PLEXIGLASS AND SHALL HAVE FINGER-TIP OPENINGS WITH RECESSED METAL CUPS TO PERMIT EASE OF OPENING. ALL SHELVES SHALL BE PROVIDED WITH A 3/4 TO ONE INCH LIP TO PREVENT MATERIAL FROM SLIDING OFF WHILE THE VEHICLE IS IN MOTION AND THE DOORS ARE OPEN. CABINET COMPARTMENT DOORS (SLIDING AND HINGED) SHALL BE POSITIVE LOCKING OR FITTED WITH FRICTION HOLDING DEVICES. CHANNELS FOR ALL SLIDING DOORS SHALL BE LINED WITH MATERIAL TO REDUCE RATTLES.

30.8.9.4 STREETSIDE CABINET SECTION 1. THE FIRST SECTION BEHIND THE PARTITION SHALL BE APPROXIMATELY 30 INCHES WIDE. THE LOWER PORTION OF SECTION 1 SHALL BE AN ENCLOSED COMPARTMENT HAVING A VERTICAL HEIGHT LEVEL WITH THE TOP OF THE ATTENDANT'S SEAT. ACCESS TO THIS COMPARTMENT SHALL BE THROUGH A 10 INCH SQUARE, SOLID, DROP-HINGED DOOR LOCATED THREE INCHES ABOVE THE FLOOR AND ONE INCH IN FRONT OF THE ATTENDANT'S BENCH. IMMEDIATELY ABOVE THIS COMPARTMENT, A SLIDING DOOR CABINET SHALL BE PROVIDED. THIS CABINET SHALL BE APPROXIMATELY 14 TO 15 INCHES HIGH AND SHALL HAVE TWO ADJUSTABLE SHELVES. THE BOTTOM OF THIS CABINET SHALL BE EVEN WITH THE TOP OF THE ATTENDANT'S SEAT. A SLIDING DOOR CABINET, WITH ONE FIXED SHELF SHALL BE PROVIDED IN THE AREA REMAINING IN SECTION 1.

30.8.9.5 STREETSIDE CABINET SECTION 2. THE SECOND SECTION SHALL BE 18 INCHES WIDE. THE TOP AND BOTTOM PORTION OF THIS SECTION SHALL BE FLUSH WITH SECTIONS 1 AND 3. THE TOP PORTION SHALL BE 18 INCHES WIDE AND APPROXIMATELY 20 INCHES HIGH. THE LOWER PORTION SHALL BE 18 INCHES WIDE AND 18 INCHES HIGH. THE CENTER PORTION SHALL BE RECESSED NOT LESS THAN SIX INCHES AND SHALL HAVE A WIDTH OF 18 INCHES. A DUAL OXYGEN OUTLET SHALL BE FLUSH MOUNTED AND CENTERED IN THE UPPER PORTION OF SECTION 2 AT A HEIGHT TO PRECLUDE ANY INTERFERENCE WITH THE RECESSED PORTION, WITH THE OXYGEN FLOW METER AND HUMIDIFIER INSTALLED. THE RECESSED AREA SHALL ACCOMMODATE THE PORTABLE SUCTION UNIT SPECIFIED IN 30.9.3. THE WALL MOUNT BRACKETS FURNISHED WITH THE SUCTION UNIT SHALL BE MOUNTED ON THE REAR FLAT SURFACE OF THE RECESSED AREA FOR THE STORAGE AND IN-VEHICLE OPERATION OF THE SUCTION UNIT. A QUICK DISCONNECT RETAINING STRAP SHALL BE PROVIDED TO SECURE THE SUCTION UNIT WHILE IN TRANSIT. THE 12 VOLT PLUG OF THE SUCTION UNIT (SEE 30.9.3) SHALL BE PROVIDED IN THE RECESSED AREA ON THE TOP OF THE REAR FLAT SURFACE. TO FACILITATE INSPECTION, REPAIR, AND REPLACEMENT, THE OXYGEN OUTLETS AND ELECTRICAL RECEPTACLE SHALL BE MOUNTED ON REMOVABLE PANELS.

30.8.9.6 STREETSIDE CABINET SECTION 3. THE THIRD SECTION SHALL CONSIST OF A COMPARTMENT TO THE REAR OF THE WHEEL WELL TO ACCOMMODATE STORAGE OF THE SPARE WHEEL ASSEMBLY AND TOOLS. IF TOOLS ARE STORED WITH THE SPARE WHEEL ASSEMBLY, DEVICES TO PREVENT RATTLING SHALL BE FURNISHED. THIS COMPARTMENT SHALL BE COVERED WITH A SOLID PANEL WHICH CAN BE REMOVED VERTICALLY OR A SOLID PANEL DOOR HINGED FORWARD TO PERMIT EASY ACCESS TO THE SPARE WHEEL ASSEMBLY AND TOOLS WITHOUT MOVING THE PATIENT COT. A SLIDING DOOR CABINET 8 TO 12 INCHES HIGH SHALL BE INSTALLED OVER THE SPARE WHEEL COMPARTMENT EXTENDING FROM THE RECESSED AREA TO THE BACK DOOR. TWO MORE CABINETS OF EQUAL HEIGHT SHALL BE INSTALLED HORIZONTALLY FROM THE RECESSED AREA TO THE FORWARD WALL OF THE SPARE WHEEL STORAGE. THE BOTTOM OF THE LOWER CABINET IS TO BE 18 INCHES FROM THE FLOOR OVER THE WHEELWELL. BOTH CABINETS SHALL HAVE SLIDING DOORS. THE DESIGN OF THESE CABINETS SHALL BE COMPATIBLE WITH THE VEHICLE CONFIGURATION.

30.8.9.7 EMERGENCY OXYGEN SUPPLY HOLDER. A FLOOR-MOUNTED TYPE DUAL-OXYGEN BOTTLE BASE, FERNO WASHINGTON MODEL 516 OR EQUAL, SHALL BE MOUNTED IN THE SIDE LOADING DOOR STEPWELL. THE UNIT SHALL BE MOUNTED AS FAR FORWARD AS POSSIBLE WITHOUT INTERFERING WITH THE SIDE DOOR MECHANISM.

30.8.9.8 IRRIGATOR HOOK, (I V). TWO DYNA MED INC. MODEL 1063-CA, OR EQUIVALENT CEILING ATTACHMENT HOLDERS SHALL BE INSTALLED FOR SUSPENDING INTRAVENOUS SOLUTION CONTAINERS. THE HOLDERS SHALL BE INSTALLED 36 INCHES TO 48 INCHES FROM THE PARTITION AT THE REAR OF THE DRIVER'S COMPARTMENT AND EIGHT INCHES ± ONE INCH FROM THE VEHICLE LONGITUDINAL CENTERLINE ON BOTH SIDES. THE HOLDERS SHALL BE CIRCULAR AND FITTED WITH A SPRING SNAP CLOSURE TO PROVIDE POSITIVE BOTTLE RETENTION WHEN THE VEHICLE IS IN MOTION.

30.8.10 ATTENDANT STRAP HANGERS OR GRAB RAIL (PLAN AA AND AN).

30.8.10.1 STRAP HANGERS (PLAN AN). FOUR REMOVABLE STRAP HANGERS FOR ATTENDANT SUPPORT SHALL BE PROVIDED IN THE CEILING. GRAB RAILS NOT REQUIRED.

30.8.10.2 GRAB RAIL (PLAN AA). AN OVERHEAD GRAB RAIL SHALL BE PROVIDED. THE RAIL SHALL HAVE NOT LESS THAN A ONE-INCH OUTSIDE DIAMETER, STAINLESS STEEL TUBING, WITH A TWO-INCH CLEARANCE BETWEEN THE TOP OF THE RAIL AND THE CEILING. THE RAIL SHALL BE APPROXIMATELY SIX FEET LONG, CENTERED LONGITUDINALLY OVER THE COT WHEN IT IS IN PLACE ON THE STREET SIDE OF THE VEHICLE. THE RAIL SHALL BE POSITIONED (LATERALLY) ON THE VEHICLE CENTER LINE. THE ENDS OF THE GRAB RAIL SHALL BE CURVED UPWARD, TOWARD THE CEILING. THE ASSEMBLY SHALL BE BRADLEY GRAB BAR 857-002-72-2, OR EQUIVALENT.

30.9 OXYGEN AND SUCTION SYSTEMS AND EQUIPMENT.

30.9.1 OXYGEN SYSTEM (PLAN AA AND AN). UNLESS OTHERWISE SPECIFIED, THE OXYGEN SYSTEM SHALL CONFORM TO 3.12.1 AND 3.12.1.1, AND CONSIST OF ONE "H" SIZE OXYGEN CYLINDER, PRESSURE REDUCTION VALVE, FLOW METER, PRESSURE GAGE, HUMIDIFIER, TWO WALL OUTLETS AND NECESSARY HIGH PRESSURE OXYGEN HOSE, AND ACCESSORIES FOR A PIPED OXYGEN SYSTEM. THE VEHICLE USER WILL FURNISH AND INSTALL THE OXYGEN CYLINDER AT THE TIME THE VEHICLE IS PLACED IN SERVICE. THE OXYGEN CYLINDER WILL BE LOCATED IN THE STORAGE COMPARTMENT AS SPECIFIED IN 30.8.9.2 AND 30.8.8.2. SUFFICIENT CLEARANCE SHALL BE PROVIDED BETWEEN THE OXYGEN STATION AND THE VACUUM OUTLET TO PERMIT REMOVAL AND INSTALLATION OF THE FLOW METER AND OTHER DEVICES. THE OXYGEN HOSE FURNISHED SHALL BE TEFLON, WIRE BRAIDED TYPE. THE H OXYGEN TANK SHALL CONFORM TO DOT SPECIFICATION 3AA2015: OUTSIDE DIAMETER 9 INCHES (1/2 - 0); OVERALL HEIGHT W/VALVE 55 INCHES; CAPACITY 221 CUBIC FEET; WEIGHT EMPTY 135 POUNDS AND WEIGHT FULL 145 POUNDS.

30.9.1.1 OXYGEN STATION (PLUG-IN CONNECTIONS), PLAN AA AND AN. PLUG-IN CONNECTIONS SHALL BE FURNISHED FOR THE OXYGEN OUTLET STATION. THE OXYGEN OUTLET SHALL BE A DOUBLE OUTLET, CHEMETRON 400 SERIES PART EQUIVALENT TO 376 SERIES, PART NO. 700100-64 (OXYGEN-BLANK-BLANK-OXYGEN) OR EQUAL, WITH BOTTOM INLET. THE OXYGEN OUTLET SHALL BE MOUNTED IN THE STREETSIDE CABINET AS SHOWN IN APPENDIX FIGURES. THE OXYGEN OUTLET SHALL BE EQUIPPED WITH FLOWMETER/REGULATOR, OXYGEN 15 LITERS PER MINUTE (LPM) WITH QUICK DISCONNECT ADAPTER INLET CHEMETRON PART NO. 34-01-0003 OR EQUAL, AND A HUMIDIFIER BUBBLER TYPE WITH PLASTIC BOTTLE CHEMETRON PART NO. 34-10-0001 OR EQUAL. THE SECOND OUTLET SHALL BE USED FOR OTHER DEVICES AND A MATING OUTLET FITTING SHALL BE PROVIDED.

30.9.2 SUCTION ASPIRATOR, PRIMARY SYSTEM (PLAN AA). THE REQUIREMENTS OF 3.12.3 APPLY, EXCEPT AS MODIFIED BELOW.

30.9.2.1 PLUG-IN OUTLET FOR ASPIRATION SYSTEM FOR PLAN AA. THE VACUUM OUTLET OF 3.12.3 SHALL BE A CHEMETRON 400 SERIES PART NO. 64-50-0009 OR EQUAL, SINGLE PLUG-IN, SELF-SEALING VALVE CONNECTION WITH A BOTTOM INLET. THE PLUG-IN UNIT SHALL PREVENT THE ENTRY OF DUST WITHOUT THE USE OF A DUST CAP OR COVER AND ALLOW THE ATTACHMENT AND RELEASE OF SECONDARY EQUIPMENT WITH ONE HAND. THE FOLLOWING ITEMS SHALL BE FURNISHED: ONE EACH REGULATOR WITH FULL LINE CAPABILITY, CHEMETRON PART NO. 22-01-0012 OR EQUAL; ADAPTER, DISS MALE TO SERRATED STEM FOR HOSE, CHEMETRON PART NO. 15-90-0002 OR EQUAL; HOSE, PLASTIC, VACUUM, 18 INCHES IN LENGTH, CHEMETRON PART NO. 15-21-0001 OR EQUAL; TWO EACH COLLECTION BOTTLE ASSEMBLIES, CHEMETRON PART NO. 22-10-0002 INCLUDING ADAPTER HOSE TO DISS FEMALE, CHEMETRON PART NO. 22-93-0005, OR EQUAL; BOTTLE HOLDER WITH LOCK, CHEMETRON PART NO. 22-11-0007 OR EQUAL; BRACKET (FOR WALL MOUNT TO ACCEPT BOTTLE HOLDER), CHEMETRON PART NO. 22-11-0006 OR EQUAL. OUTLET AND BRACKETS SHALL BE MOUNTED AS SHOWN IN APPENDIX FIGURE 7.

30.9.3 PORTABLE SUCTION ASPIRATOR (VACUUM SYSTEM, PLAN AA AND AN). A PORTABLE BATTERY POWERED UNIT LAERDAL CATALOG NO. 79 00 00, COMPLYING TO 3.12.4 PERFORMANCE SHALL BE FURNISHED TO INCLUDE:

(A) A POWER PACK COMPLETE WITH BATTERY CHARGER RECHARGEABLE BATTERIES.

(B) WIRED TO VEHICLE 12 VDC SYSTEM (3.7.7.3) AND INSTALLED IN APPLICABLE CABINETS AS SPECIFIED. THE PLUG AND RECEPTACLE SHALL BE OF THE COMMERCIAL QUICK-DISCONNECT (NOT SCREW-IN) TYPE.

30.10 Environmental: Climatic and Noise Parameters.

30.10.1 Environmental Systems (3.13). Heating, air conditioning, ventilation and sound level requirements shall comply to section 3.13.

30.11 Communications.

30.11.1 Communications Equipment (3.14). Unless otherwise specified (see 60.2) shall comply to section 3.14. The amplifier and its controls shall be mounted on the driver's compartment ceiling, centered between the driver and the assistant with controls accessible to both.

30.11.2 Siren speaker location and mounting (Plan AA and AN). An external speaker, designed for roof mounting, with a weatherproof driver shall be installed on the centerline of the cab roof in a location that will not obstruct light from or movement of the roof mounted spotlight or rotating warning light. The speaker shall be metal with a chrome finish, aluminum, or fiberglass painted to match the vehicle exterior color. A gasket of not less than 1/16 inch thick shall be furnished between the speaker mounting bracket and the vehicle roof to minimize drumming. When necessary to prevent deflection and drumming, reinforcements shall be provided on the vehicle at the point of attachment of the speaker. The speaker location shall permit servicing of the vehicle without removing the speaker.

30.12 Additional Systems, Equipment, Accessories and Supplies.

30.12.1 Additional and Optional Equipment (3.15). Shall be furnished as specified in section 3.15, and as selected by the purchasing agency (see 60.2).

30.13 Preparation for Painting, Color and Markings.

30.13.1 Preparation for Painting, Color, and Markings (3.16). As specified by the procuring activity for the appropriate service (see 60.2) treatment and painting shall be in accordance with the specification. The exterior color of the vehicle shall be nearest gloss white, matching color chip No. 17886 of Fed. Std. No. 595. The grill and mirrors shall be furnished in bright finish metal as OEM standard or option. Unless otherwise specified (see 60.2) ambulance markings and data plates shall be in accordance with MIL-STD-1223, and 3.19.

40. QUALITY ASSURANCE

40.1 Quality Assurance Provisions, Tests, and Certifications. Except as specified in 30.1, quality assurance provisions shall comply to section 4 of the specification.

50. PREPARATION FOR DELIVERY

50.1 Preparation. Unless otherwise specified, preparation for delivery shall comply to 5.1.

60. NOTES

60.1 Intended Use of Appendix. The intended use of this appendix is to procure a standardized certified "Star of Life" ambulance for military services use. Military agencies desiring an ambulance (type II M) must use the "Ordering Data," 60.2 following. (Use the ordering data 6.2 of the specification for other types of ambulances.) All purchasers should read the entire document (including any amendments) before requisitioning an ambulance, to be aware of just what equipment and requirements are standard and which options need to be excised.

60.2 Ordering Data. Procurement document should specify the following:

(a) Title, number, and date of this specification, appendix, and amendment number if any.

(b) Type, class, and floor plan of ambulance required (see 10.2) identify appropriate service.

(c) Engine, (V8 gasoline is standard) specify if 6 cylinder or OEM diesel engine is desired (see 30.3).

(d) Power plant heaters (engine/battery) in lieu of 3.15.3-15) state if required (see 30.3.2).

(e) Air pollution controls, cite where ambulance will operate, county and state, or if it is for export, name country (see 3.6.4.3 and 3.22.1 and 3.22.2).

(f) Drive train and transmission (automatic and special traction rear-end is standard) if class 2 (4x4) specify requirements; if other than that specified (3.6.5 through 3.6.5.9), check chassis manufacturer's data.

(g) Wheels and tires, highway tread is standard for all classes of ambulances. Mud and snow or all purpose type tires should be specified if 4x4 vehicle. Specify radial tires if desired (see 3.6.8 to 3.6.9).

(h) Spare tire assembly, specify if not required (see 3.6.10).

(i) Electrical wiring and generating systems, suppliers are required to provide necessary generating capacity (see 30.4). If additional capacity is desired for purchaser's installed electrical devices, specify the minimum reserve amperes needed (see 3.7 to 3.7.12).

(j) Warning and exterior lighting, red and clear warning lights are Federal standard, specify other color(s) only if export vehicle, or required by state or local regulations. Specify if strobe type lights are desired (see 30.5 to 30.5.7.1, and 3.8 to 3.8.4).

(k) Removal of exterior lights for shipment, if required (see 30.5.4).

(l) Storage compartments and facilitations, cite any changes (see 30.8 to 30.8.9.8) cite paragraph which is being modified.

(m) Stretchers, cots, and litters, specify any cots needed (see 30.8.3, table II and 3.11.5 to 3.11.7).

(n) Oxygen system and equipment, cite any changes necessary (see 30.9 to 30.9.1.1, and 3.12 to 3.12.1.1).

(o) Suction aspirator system, for plan AA select engine vacuum and/or electrically powered type (see 30.9.2 to 30.9.3 and 3.12.3 to 3.12.4).

(p) Painting, color, and marking, (see 30.13.1) specify any changes.

(q) Rustproofing, if required (see 3.18).

(R) SPECIAL REQUIREMENTS, STATE ANY OTHER ADDITIONS, CHANGES, OR DELETIONS TO THE SPECIFICATION (SEE 3.22).

(S) OVERSEAS VEHICLE REQUIREMENTS, SELECT (A) THROUGH (D) (SEE 3.22.1 THROUGH 3.22.3.1), INCLUDE TIEDOWN POINT AND LIFTPOINT REQUIREMENTS ONLY IF ABSOLUTELY NECESSARY.

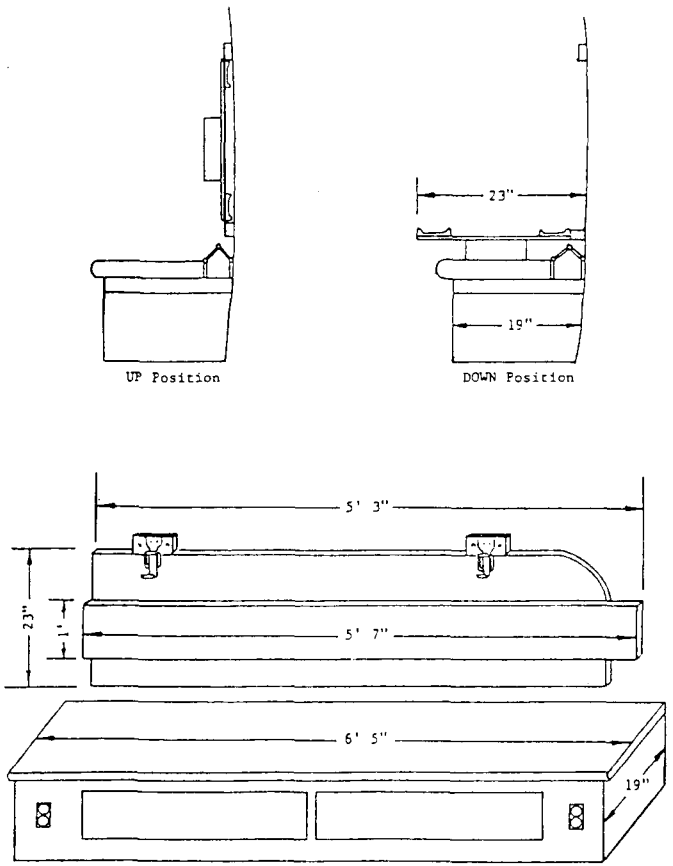
(T) QUALITY ASSURANCE PROVISIONS, SPECIFY CLASSIFICATION OF INSPECTION DESIRED (SEE 4 THROUGH 4.2.7 AND 40).

1. SOURCE INSPECTION (SEE 4.2.1) OR

2. DESTINATION EXAMINATION (SEE 4.2.2).

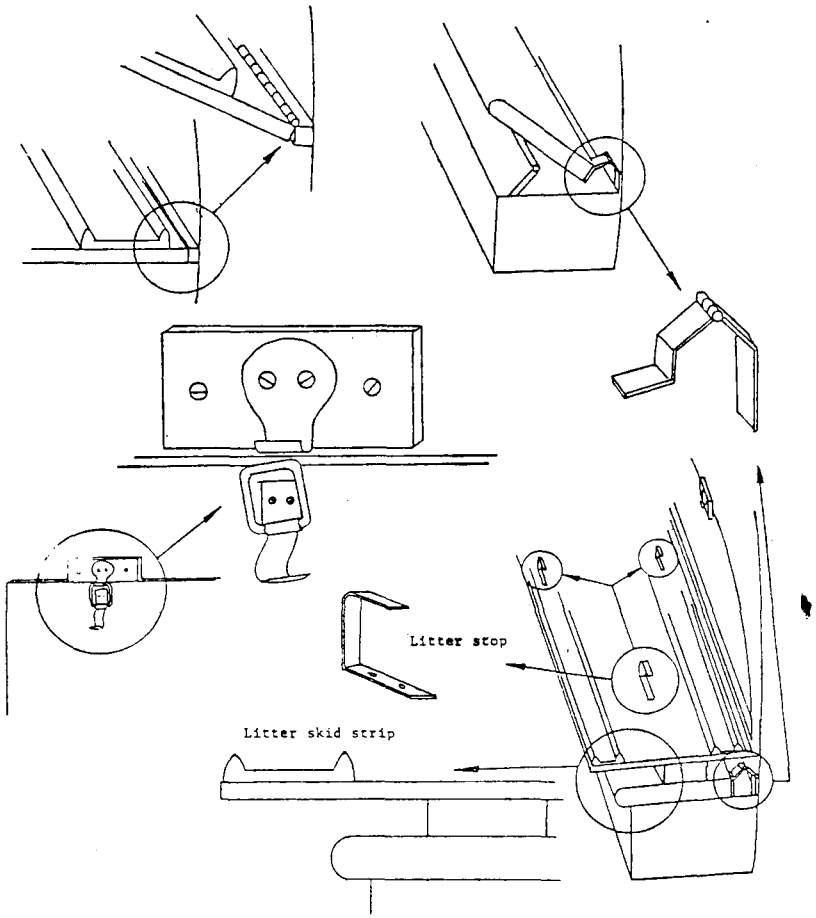
(U) FIRST PRODUCTION AMBULANCE INSPECTION, STATE IF REQUIRED (SEE 4.2.5).

(V) PROCUREMENT REQUIREMENTS, (SEE 6.3) SPECIFY OTHER PURCHASER'S CONTRACTUAL REQUIREMENTS.

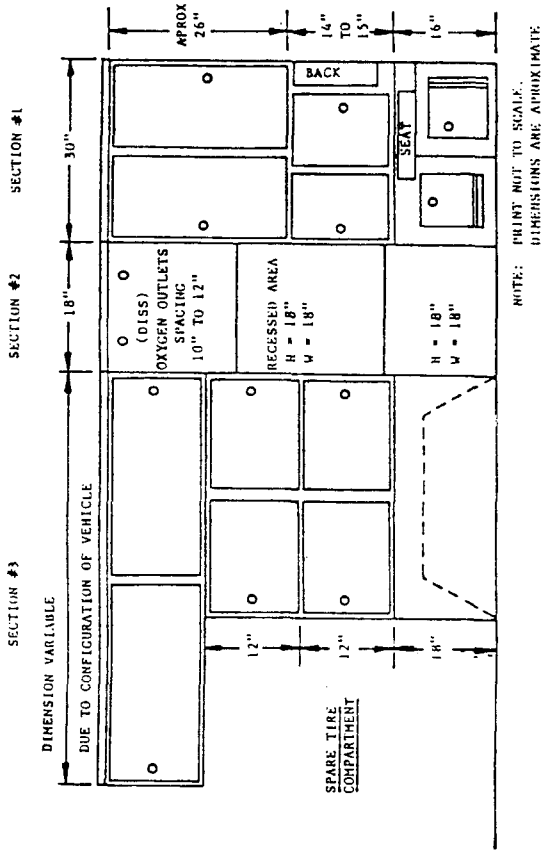


NOTE: Unless otherwise specified herein, all dimensions are approximate.

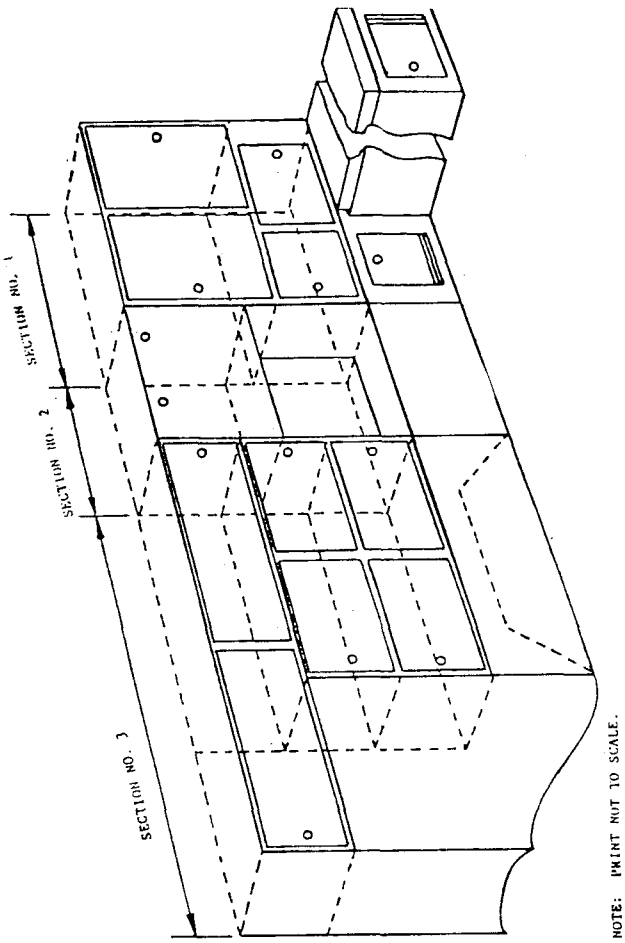
APPENDIX FIGURE 1 COMBINATION BACKREST/LITTER SUPPORT PANEL - PLAN AA



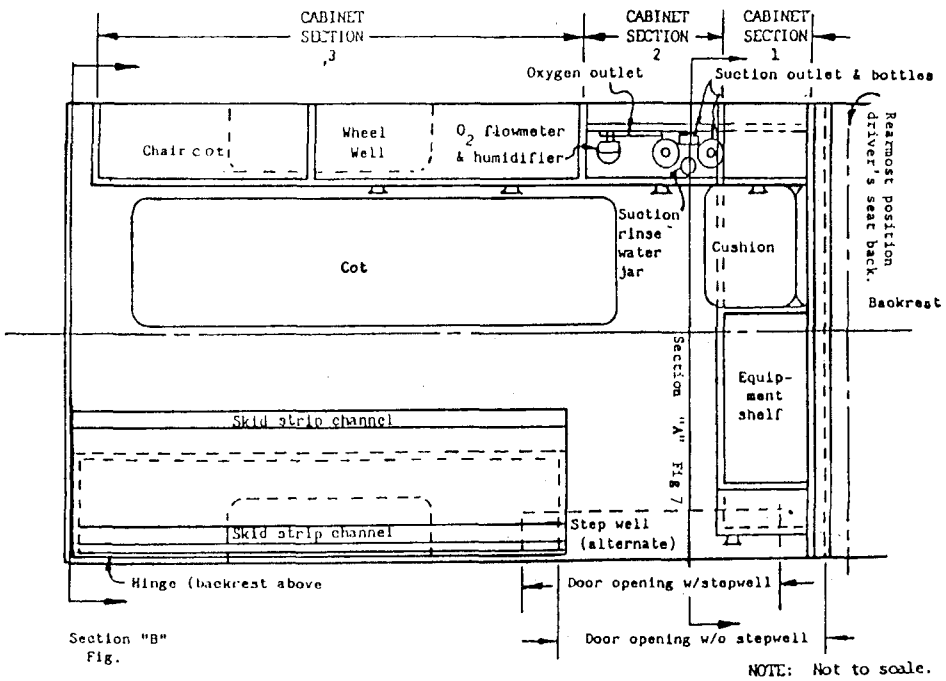
APPENDIX FIGURE 2 DETAIL COMBINATION BACKREST/LITTER SUPPORT PANEL - PLAN AA



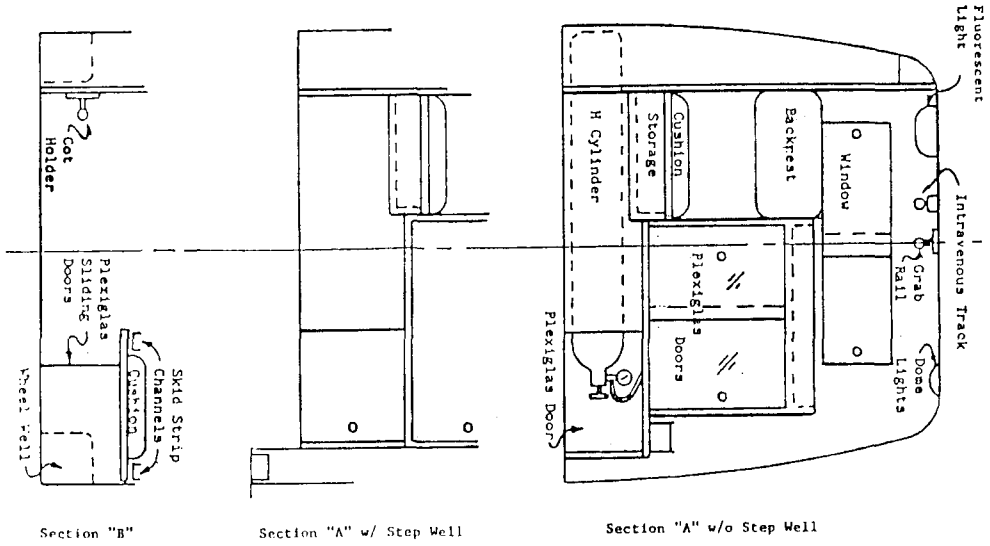
APPENDIX FIGURE 3 STREETSIDE CABINETRY - PLAN AN



APPENDIX FIGURE 4 STREETSIDE CABINETRY - PLAN AN

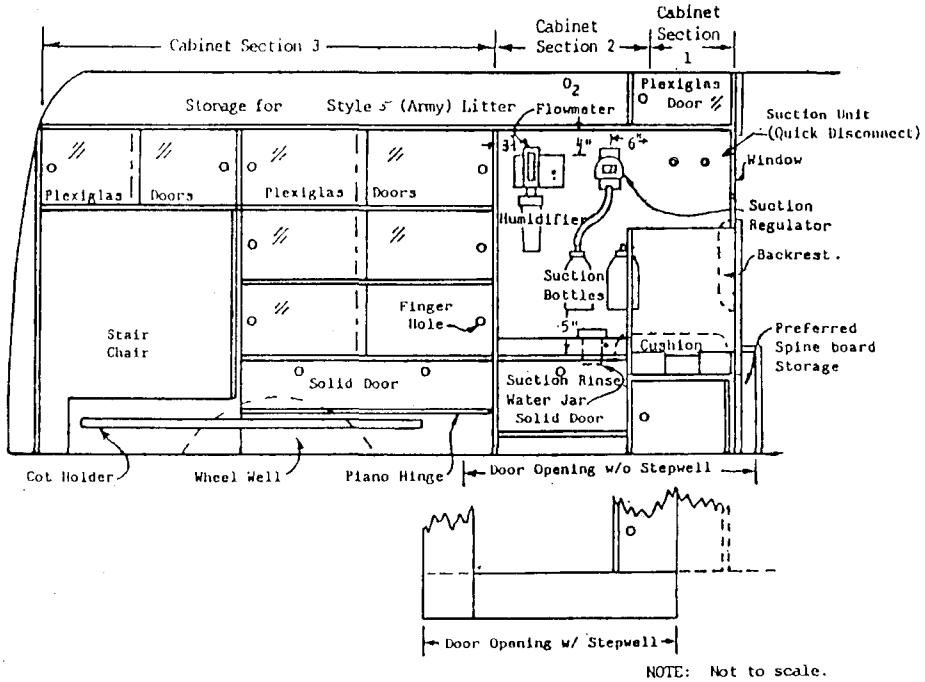


APPENDIX FIGURE 5 PLAN VIEW - PATIENTS' COMPARTMENT - PLAN AA



NOTE: Not to scale.

APPENDIX FIGURE 6 SECTIONAL VIEWS - PATIENTS' COMPARTMENT - PLAN AA



NOTE: Not to scale.

APPENDIX FIGURE 7 STREETSIDE CABINETRY AND EQUIPMENT - PLAN AA

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GENERAL SERVICES ADMINISTRATION - FEDERAL SUPPLY SERVICE

SPECIFICATION COMMENT SHEET

BUDGET BUREAU NO. 29-R0175

INSTRUCTIONS

This form provides a way for users of this specification to inform the originator of problems encountered in its use. It is not to be used to request changes to accommodate proprietary features. All comments will be considered and appreciated, but please do not expect a reply. To comment: detach, complete, fold, staple, and mail. to GSA-FSS-FAE, CMBg. #4, Rm. 420, Wash., DC 20406.

NOTE: Comments on this form do not constitute or imply authorization to waive any part of the document or serve to amend contractual requirements.

1. SPECIFICATION

KKK-A-1822A AMBULANCE
Emergency Medical Care Surface Vehicle

2. CONTRACT NO. *(If any)*	3. QUANTITY ON CONTRACT *(Optional)*	4. DOLLAR VALUE *(Optional)*

5. GENERAL NATURE OF PROBLEM *(e.g., inspection difficulties, manufacturers unable to meet tolerances, containers collapse under normal warehousing conditions, etc.)*

6. SPECIFIC REQUIREMENTS AFFECTED *(Include paragraph number and lines of wording)*

7. SPECIFIC PROBLEMS *(e.g. tests in 4.2.2 will not assure that the battery will last required time; temperature ranges in table 2 do not conform to commercially available items.)*

8. RECOMMENDATIONS

9. NAME OF MANUFACTURER, ASSOCIATION, GOVT., AGENCY, ETC.	10. ADDRESS *(Number, Street, City, State and Zip Code)*

11. NAME AND TITLE OF SUBMITTER	12. DATE

GSA DC 69-9761

FORM GSA FEB 69 2200