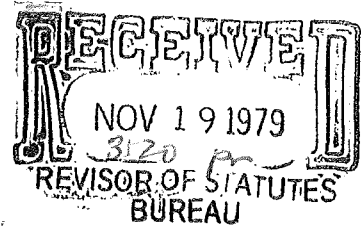


TRANS 157

C E R T I F I C A T E

STATE OF WISCONSIN )  
 ) ss  
DEPARTMENT OF TRANSPORTATION )



TO ALL TO WHOM THESE PRESENTS COME:

I, LOWELL B. JACKSON, Secretary of the Department of Transportation and custodian of the official records of the Department do hereby certify that the annexed rules relating to ambulance inspection standards, were duly approved and adopted by the Department on November 19, 1979.

I further certify that the copy has been compared by me with the original on file in this Department and that the same is a true copy thereof, and of the whole of such original.



IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the Department at the Hill Farms State Office Building in the City of Madison, this 19th day of November, 1979

Lowell B. Jackson  
Secretary



STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION  
OFFICE OF THE SECRETARY

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IN THE MATTER OF THE ADOPTION :  
OF CHAPTER TRANS 157, WIS. : ORDER  
ADMIN. CODE, RELATING TO : ADOPTING RULES  
AMBULANCE INSPECTION STANDARDS :

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Background

This administrative rule deals with emergency ambulance specifications and medical equipment standards. It is being adopted by the Department of Transportation (DOT) for the purpose of implementing the ambulance inspection program mandated in section 341.085, Wis. Stats. This program was transferred to the DOT by Chapter 29, Laws of 1977, which provided that existing ambulance inspection rules of the Department of Health and Social Services (DHSS) were to be administered by the DOT until modified or rescinded. (See sec. H 20, Wis. Admin. Code.) The DHSS continues to administer the ambulance service provider licensing program under section 146.50, Wis. Stats. Under the statute the ambulance inspection rules become mandatory on December 30, 1979.

This revision carries forward the substance of the existing ambulance rules in sec. H 20, Wis. Admin. Code. However, the basic format has been changed. The former rule incorporates by reference certain documents published by the U.S. General Service Administration and the American College of Surgeons pertaining to ambulance construction and medical equipment, respectively. [See "Federal Specifications - Ambulance - Emergency Medical Care Vehicle KKK-A-1822" and "Essential Equipment for Ambulances," a bulletin published by the American College of Surgeons (Revised 9/77).] TRANS 157 draws upon these sources but the specific standards and requirements are printed in full in the rule text. Also, since the GSA's KKK specifications were written for procurement purposes, some changes in the wording were necessary. For example, the rule omits the KKK-A-1822 requirement that interior upholstery be color coordinated with interior furnishings and the requirement that paint finish be 1.25 mils thick. The DOT's objective has been to incorporate only the essential substantive standards established in the KKK specifications, recognizing that all major ambulance manufacturers follow the full text of KKK-A-1822 when designing and constructing their products.

Also, this rule contains a number of changes from the initial draft presented at the public hearings. A discussion of the more significant changes is included in the section-by-section analysis set forth below.

## Section-by-Section Analysis

### Subchapter I

[TRANS 157.01] This section outlines the general purpose and applicability of the rule. It states that the rule will apply to all ambulances in service on or after December 30, 1979. Particular stress is given to the fact that ambulances, like all other vehicles operated on the highway, are subject to all statutes and rules covering motor vehicle design and construction and that these rules are aimed at supplementing rather than superceding those statutes and rules. For example, the standards for exhaust systems and braking systems in Ch. 347, Wis. Stats., and MVD 5, Wis. Admin. Code, also apply to ambulances and those systems will be included in the DOT's inspection.

The rule also stresses that these standards are the minimum required for all ambulances and may be exceeded by the registrant. It also alerts registrants that their ambulances may be subject to more restrictive and rigid standards imposed as a condition for federal financing in the acquisition of vehicles and equipment. For example, vehicles purchased with federal funds must meet strict KKK specifications on color, lettering and marking. Also, the use of the "Star of Life" symbol is governed by federal trademark law. This point was discussed at each of the public hearings. The DOT has attempted to make it clear that TRANS 157 cannot permit the use of registered trademark symbols on vehicles that are not entitled to use them. Conversely, the DOT's inspection under this rule will not require the use of such markings and symbols. (See note to TRANS 157.18 to 157.20 for further discussion on this topic.)

The initial draft also spelled out the registrant's responsibility for the acts of its agents and employes. While this language was merely a restatement of general agency law, it stimulated considerable comment and confusion. Many expressed the fear that the registrant would be made liable for traffic offenses committed by an employe. Therefore, the DOT is primarily concerned with assuring that ambulances meet the required standards and does not intend to assign any fault or blame for noncompliance. This language was removed to eliminate the confusion.

[TRANS 157.02] This section contains definitions of terms that are used repeatedly throughout the rule.

[TRANS 157.03] This section underscores the statutory requirement of annual inspections for each ambulance registered in Wisconsin. The rule states that ambulances that do not pass the inspection will display an "Out of Service" sticker unless the inspector determines that the defect or deficiency will not seriously affect the safe transportation of sick, injured or disabled persons. In the latter event, the ambulance owner must correct the defect within the time limit prescribed by the inspector, not to exceed 30 days, or take the vehicle out of service. Ambulances displaying an "Out of Service" sticker may not be put back in service until they have been reinspected and approved by the DOT. Noncomplying ambulances that are taken out of service permanently must have all special identifying markings removed.

In response to hearing testimony, the rule has been revised to express the DOT's standing policy that inspections will be performed at the registrant's base of operations whenever possible and that these inspections will be done in a manner that will not interfere with the registrant's service. Also eliminated is the requirement that ambulances taken out of EMS service be reported and have their orange stripe removed.

[TRANS 157.04] This section prescribes which standards in Ch. TRANS 157 are applicable to ambulances used for intensive medical care and neonatology medical care services. These vehicles are used for highly specialized purposes and do not respond to accident calls. Accordingly, some standards that may be appropriate for general ambulance vehicles are considered to be inappropriate to this class of ambulances.

[TRANS 157.05] This section exempts certain ambulances from some requirements of TRANS 157. Subsection (1) exempts all ambulances in service before December 30, 1979 from certain requirements otherwise applicable to new ambulances, such as warning light installation, air conditioning and type of oxygen used. Also, under sub. (2), ambulances registered between August 1, 1976 and December 30, 1979 do not have to be altered to provide a 12-inch aisle if the patient compartment is at least 116 inches in length and at least 60 inches in height.

Subsection (3) further exempts ambulances titled to a registrant as of August 1, 1976 from the interior dimension requirements applicable to new ambulances if their interiors are at least 100 inches long, 48 inches wide and 54 inches high.

This section was redrafted to take into account other changes made in the initial draft and to clarify the DOT's intent.

[TRANS 157.06] This section requires persons who sell or lease ambulances to provide the purchaser or lessee with a written notice stating that the vehicle meets the requirements of this chapter.

[TRANS 157.07] This section provides a procedure by which owners of ambulances that have been titled as of August 1, 1976, but still do not comply with the interior dimensional specifications in sec. TRANS 157.05(3)(a) and (1) may apply for and receive a variance. The DOT will grant a variance only when it can be shown that the lack of such variance could create an undue hardship in meeting the emergency medical service needs of the community the applicant serves. This draft includes a list of general criteria to be considered in deciding whether to grant a variance. Applications for variances will be referred to the DHSS for review and recommendation and the DOT will place great weight on the DHSS's position. Moreover, the DOT will recognize as valid all such waivers and variances issued by the DHSS prior to July 1, 1979. Vehicles covered by waivers and variances are still subject to the annual inspection requirements. Lastly, the right to continue operation under variances or waivers is not transferable.

#### Subchapters II and III

These subchapters spell out the technical specifications for ambulance design, construction and medical equipment. Being technical in nature, the sections speak for themselves and do not require further explanation and analysis. However, the following changes from the initial draft, made largely as a result of suggestions received at the public hearings, should be noted:

[TRANS 157.09] The requirement for a 25-inch kneeling space along the upper one-third of the primary cot has been eliminated. Also, a center-mounted cot is permitted as long as a 12-inch aisle space is maintained.

[TRANS 157.10] This section was changed to make it clear that door openings of the required dimensions must be unobstructed.

[TRANS 157.15] The section on warning lamps was revised to make the single rotating dome beacon warning lamp optional if there are at least 2 rotating dome beacon lamps mounted at or below the roof line which, in combination, are visible

at 360 degrees. This change will accommodate ambulances that have difficulty meeting height clearances at the entrances of some hospitals. The rule also specifies that warning lamps must be red in accordance with current statutes, but any other color will be allowed if so authorized by statute.

Subsection (5)(b) was modified to make it clear that only white interior lights may be used. Other colors, such as blue, may distort skin colors and make it difficult to observe a patient's vital signs.

[TRANS 157.18, 157.19 and 157.20] The question of required ambulance color, lettering and marking was the subject of a great deal of comment at the hearings. The rule, as revised, allows the ambulance service provider to choose the color and use the words "Rescue Squad" instead of "Ambulance" so long as the "Star of Life" symbol is not displayed. As noted above, the use of white color and orange stripe is mandatory for ambulances displaying the "Star of Life". This is a condition of receiving federal financing and is also imposed by federal trademark law. The DOT cannot authorize ambulance owners to avoid those requirements imposed by external sources.

[TRANS 157.22] The requirement for a 12 VDC electrically-powered portable suction unit has been revised to allow any type of portable suction, other than the canister (Freon) type, as long as the unit meets the medically necessary flow rates and reliability criteria established in the rule.

[TRANS 157.23] Testimony received at the hearings disclosed that the oxygen system specifications excluded all but one supplier. Accordingly, the text was changed to permit units supplied by other manufacturers without affecting the quality or usefulness of the standard. Also, the need for a spare cylinder of oxygen for the portable unit was eliminated and the requirement for accessibility of the portable unit from outside the vehicle was relaxed to the extent of allowing it to be reached by making one step inside the vehicle.

[TRANS 157.24] This section was changed to specify that an ambulance need not carry extrication equipment if the ambulance is accompanied by a rescue vehicle on every accident call pursuant to a written agreement with a rescue squad.

Also, various technical changes were made to the list of extrication equipment required. (For example, the 1/2-inch nylon rope can be substituted with a propylene rope of the same length.)

[TRANS 157.25] In response to suggestions made by service operators and EMT's, minimum numbers of certain medical and surgical equipment have been specified.

Administrative Rule  
FISCAL NOTE

AD MBA-24  
(8/78)

Agency  Wisconsin Department of Transportation	Rule No.  TRANS 157
Subject (Title) of Rule  AMBULANCE INSPECTION	

Local Fiscal Effect

- Local:  Increase/decrease Existing Fiscal Liability       No Local Fiscal Effect  
 Create New Fiscal Liability      x No State Fiscal Effect  
 Increase/Decrease Existing Revenues

Types of Local Governmental Units Affected:

- (X) Towns      (x) Villages      (x) Cities      (x) Counties      ( ) Others \_\_\_\_\_

Is Fiscal Effect: ( ) Permissive      (x) Mandatory

Assumptions and methodology used in arriving at local fiscal impact or rationale for concluding that there is no fiscal impact.

1. This proposal carries forward most of the substantive requirements for ambulances in current Ch. H 20, Wis. Admin. Code, which has been in effect since August 1, 1976 and which becomes mandatory on December 30, 1979 unless modified by the DOT. Based on the standards in Ch. H 20 and this proposal, it is estimated that at least 222 of the 752 ambulances registered in Wisconsin will not be in compliance. However, the rule makes certain allowances for ambulances in service before the mandatory date. Therefore, it is estimated that not more than 5% (or 11 to 12 ambulances) will have to be taken out of service because they cannot be modified or upgraded to applicable standards. Approximately 25% (3) of that number are owned by local units of government. It is not known whether the local government involved would decide to replace those ambulances or take them out of service. A new ambulance meeting the minimum standards prescribed in subchs. II and III costs about \$20,000. If all such governmentally-owned ambulances were replaced, the total cost would equal \$60,000.
2. Some older ambulances (titled on or before August 1, 1976) will be continued in operation under the exception or variance provisions of the proposed rule. However, those vehicles nevertheless must be equipped with a hospital-type oxygen system and a suction system. The cost of any necessary upgrading would amount to about \$1,000 for an oxygen

Long-Range Fiscal Implications

Old ambulances will have to be replaced with ones meeting TRANS 157 standards. The minimum cost will be \$20,000 per ambulance at current prices and can be expected to increase because of inflation. It is not possible to estimate where the present vehicles will be replaced or how many additional ones will be acquired.

Agency Head Signature

Date



system and \$200 to \$500 for a portable suction system. It is not known at this time how many ambulances would have to be retrofitted to meet this requirement.

3. This proposal makes some additions to the standards in Ch. H 20, reflecting in part some changes made in the medical equipment list published by the American College of Surgeons since Ch. H 20 was adopted. These additional costs are:

(a) Compartmentalized Pneumatic Trouser Kit, Complete with Carrying Case (Not Required Until 1984)	\$275
(b) Two Rescue Pull Chains	50
(c) Laryngoscope and Blades	50
(d) Magill Forceps	25
(e) Twenty-Foot Nylon Rope	15
TOTAL (per ambulance whether privately or publicly owned)	\$415

4. The proposal (and current rule) are based on federal standards (KKK-A-1822) prepared by the U.S. General Services Administration for procurement purposes. The standards were updated on January 3, 1979. Under the proposal, certain items in the KKK-A-1822 standards are not required for new ambulances put in service after the effective date. The cost savings per ambulance would amount to approximately \$9,467 at current prices:

(a) 115-Volt Inverter	\$ 500
(b) Two 50' x 3/4" Manila Ropes	32
(c) Hand-Held Walkie-Talkie	800
(d) Telemetry System	8,000
(e) Intercom System	<u>150</u>
TOTAL	\$9,482
Less Cost of Nylon Rope Required	<u>-15</u>
TOTAL	\$9,467

State Fiscal Effect

The Department currently employs one full-time ambulance inspector. There are no plans to increase the number of inspectors at this time. Since the rule changes are directed at the standards to be met by the service provider and no change in existing staffing or procedures is contemplated, there will be no increase or decrease in state costs.

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Pursuant to authority vested in the Wisconsin Department of Transportation by secs. 110.06, 227.014 and 341.085(2), Wis. Stats., the Department of Transportation hereby adopts rules interpreting sec. 341.085, Wis. Stats., as follows:

Chapter TRANS 157 of the Wisconsin Administrative Code is created to read:

CHAPTER TRANS 157

AMBULANCE INSPECTION

SUBCHAPTER I GENERAL PROVISIONS

TRANS 157.01 Purpose and scope; construction. (1) The purpose of this chapter is to prescribe minimum vehicle and medical equipment specifications for ambulances and to establish administrative procedures for implementing the ambulance inspection program under s. 341.085, Stats.

(2) This chapter applies to all ambulances in service in this state on or after December 30, 1979.

(3)(a) This chapter shall be construed liberally to effectuate the legislative purpose of promoting safe, efficient emergency transportation for the sick, injured and disabled.

(b) Vehicles subject to the standards and specifications prescribed in the chapter are also subject to any other administrative rule or statute governing motor vehicle design, construction or equipment. Unless the express terms or context requires otherwise, this chapter shall be construed as supplementing rather than conflicting with such statutes or other administrative rules.

(c) This chapter prescribes minimum standards applicable to all ambulances subject to inspection under sec. 341.085, Stats. Ambulance service providers may exceed these minimum standards. Also, some ambulances may be subject to higher or more restrictive standards imposed as conditions for receiving federal assistance in connection with the acquisition of ambulance vehicles and equipment. Ambulance service providers are responsible for complying with all conditions and requirements, including those relating to color, marking and the use of the "Star of Life" symbol, contained in federal financial assistance grants or agreements.

TRANS 157.02 Definitions. As used in this chapter:

- (1) "Ambulance" means any emergency motor vehicle, whether privately or publicly owned, which is designed, constructed or equipped to transport patients.
- (2) "Department" means the department of transportation.
- (3) "Inspector" means any officer or employe of the department who is authorized and assigned the duty of conducting ambulance inspections under this chapter.
- (4) "Person" means any individual, corporation, partnership, association, the state and political subdivision thereof and any municipal corporation.
- (5) "EMT" means emergency medical technician.
- (6) "Type I Ambulance" means a motor truck with a modular unit having a rear window opening into the modular unit (See Figure I).
- (7) "Type II Ambulance" means a van type vehicle constructed or converted with a raised roof (See Figure II).
- (8) "Type III Ambulance" means a specialty van and modular unit with a walk-through from the cab to the modular unit (See Figure III).

TRANS 157.03 Annual inspections.

(1) No person may use any motor vehicle for the purpose of providing ambulance services unless the vehicle has been inspected and approved annually by the department for use as an ambulance in this state. Except as otherwise provided, each ambulance so inspected shall meet the minimum standards applicable to that vehicle under subchs. II and III.

(2) The registrant shall present the vehicle for inspection when notified by the department and shall cooperate with the inspector. Whenever possible, the department shall perform the inspections at the registrant's place of business or other site convenient to the registrant's base of operation. The inspector shall conduct the inspection in a manner that will not interfere with the registrant's service.

(3)(a) Subject to sub. (4) if upon inspection a vehicle is found to be unsafe or improperly constructed or equipped for use as an ambulance, the inspector shall attach an "OUT OF SERVICE" sticker to the glass in the rear door of the vehicle. A vehicle may not be put in service as an ambulance while the sticker is so displayed. Except as provided in par. (b), the "OUT OF SERVICE" sticker may be removed only after the deficiencies noted on the inspection report have been corrected and the vehicle has been reinspected and approved by the department.

(b) The owner or lessee of a vehicle that has been declared "out of service" may remove the sticker without the department's approval if the vehicle is no longer to serve as an ambulance. In that event, the owner or lessee shall remove all special ambulance identifying markings and features from the vehicle, including:

1. Removing the red lights and siren unless the vehicle is being converted for use as another kind of authorized emergency vehicle;
2. Removing the "Star of Life" symbol, if displayed; and
3. Removing or painting over any lettering identifying the vehicle as an ambulance.

(4) If upon inspection a vehicle is found defective or deficient but, in the judgment of the inspector, may nevertheless be operated as an ambulance without seriously affecting the safe transportation of sick, injured or disabled persons, the inspector shall note the deficiency on the ambulance inspection report and shall specify the time, not to exceed 30 days, in which the registrant is required to correct the defect or deficiency. If the defect or deficiency is not corrected within the time allowed, the vehicle may not be used as an ambulance.

TRANS 157.04 Specialized emergency medical care vehicles.

(1) In recognition of their highly specialized design, construction, equipment and function, mobile intensive care units and similar vehicles designed and equipped for neonatology medical services, that are used only for transportation of patients between hospitals, are exempt from the vehicle and equipment standards prescribed in this chapter. Sec. TRANS 157.09 to TRANS 157.11, sec. TRANS 157.14, sec. TRANS 157.15(3) to (5), secs. TRANS 157.18, TRANS 157.19 and TRANS 157.20 and Subch. III.

(2) Vehicles subject to this section may not be used to respond to accident calls and shall be used for mobile intensive care or neonatology medical care purposes.

(3) The vehicles may be marked as ambulances but also shall be marked as a "Mobile Intensive Care Unit" or as a "Neonatology Medical Care Unit".

TRANS 157.05 Exceptions for ambulances in service before December 30, 1979.

(1) Any ambulance titled to a licensed ambulance service provider before December 30, 1979 shall meet the requirements of subchs. II and III, except that the owner is not required to:

(a) Alter warning lamps already installed on the vehicle;

(b) Install spot or flood lamps;

(c) Install an air conditioner in the cab and patient compartment; and

(d) Install the 3,000 liter, M-size oxygen equipment if a hospital type piped oxygen is provided and there is insufficient room for an M-size tank.

(2) Any ambulance titled to a licensed ambulance service provider on or after August 1, 1976 and before December 30, 1979 need not be altered to provide a 12-inch aisle, if the patient compartment is at least 116 inches in length and at least 60 inches in height.

(3) In addition to the exceptions enumerated in sub. (1), any ambulance, titled to a licensed service provider as of August 1, 1976, is exempt from the interior dimensional standards specified in TRANS 157.09 if the interior of this vehicle's patient requirements is:

(a) At least 100 inches in length and at least 48 inches in width; and

(b) At least 54 inches in height and there is at least 39 inches of space between the surface of the litter and the ceiling. Any ambulance that is continued in service under this subsection that does not meet all other requirements of this chapter may not display the "Star of Life" symbol.

(4) The right to continue operation of ambulances under this section shall exist for the effective life of the vehicles, but that right is not transferable to any other person.

TRANS 157.06 Sale or lease of new or used vehicles for use as ambulances. Any person selling or leasing any new or used vehicle that is intended to be used as an ambulance shall provide the purchaser or lessee with a written notice stating that the vehicle complies with the requirements of this chapter.

TRANS 157.07 Variances.

(1) Any licensed ambulance service provider having an ambulance that is subject to sec. TRANS 157.05(3) but which does not meet the interior dimensional specifications listed in sec. TRANS 157.05(3)(a) and (b), may apply to the department for a variance to permit the continued operation of that vehicle as an ambulance under this chapter.

(2)(a) The department may grant a variance if it determines that the lack of such variance will create an undue hardship in meeting the emergency medical service needs of the community the applicant serves.

(b) In determining whether an undue hardship may be created if a variance is not granted, the department shall consider:

1. The kind and amount of emergency medical services available in the immediate area served by the applicant;

2. The presence of other ambulance service providers in surrounding communities that might be available to assist in emergencies through mutual aid agreements or other similar arrangements;

3. The number and type of emergency and nonemergency service calls made by the applicant within the 2-year period immediately preceding the date of application;

4. Any plans developed by the applicant to upgrade the existing vehicles to established specifications; and

5. Any other information that may be relevant to the question of the need for a variance in the particular case.

(3) Each application for a variance shall be referred by the department to the department of health and social services for review and recommendation. The department shall give great weight to such recommendation when deciding whether a variance should be granted.

(4) The department shall recognize as valid all waivers or variances issued to licensed ambulance service providers by the department of health and social services under sec. H 20(4)(f) prior to July 1, 1979.

(5) The issuance of a variance to any person for any ambulance does not exempt that vehicle from the annual inspection requirements imposed in this chapter.

(6) The right to continue operation of an ambulance for which a waiver or a variance has been granted or recognized under this section is not transferable to any other person.

## SUBCHAPTER II VEHICLE STANDARDS

### TRANS 157.09 Patient compartment interior dimensions.

(1) The patient's compartment shall have not less than 300 cubic feet of space less 10 percent deviation for cabinets, and shall meet the following specifications:

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

(b) Width. The width of the compartment after cabinet and cot installation shall be at least 12 inches with a maximum of 18 inches of clear aisle walkway between the primary cot and the squad bench or cot. A center mounted cot arrangement is permitted as long as a 12 inch aisle space is maintained.

(c) Height minimum 60 inches. The patient compartment shall be at least 60 inches in height over the patient area measured from floor to ceiling, exclusive of cabinets or equipment and symmetrical corners and edges.

(2) Interior surfaces. The interior of the body shall be free of all unnecessary 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, mildew and shall be fire resistant. [See Figure IV for illustration of interior dimensional measurements.]

TRANS 157.10 Doors.

An ambulance shall have two unobstructed door openings in addition to the doors for the driver cab compartment. There shall be at least one door opening on the right forward side and a single door or double doors at the rear of the patient compartment. A forward hinged single door, double doors or a sliding type door shall have a minimum right side door opening of 30 inches in width, and 54 inches in height for Types I and III and 42 inches in height for Type II. Rear loading doors, single or double, 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. Both doors shall be hinged at the outer edges and open back towards the side of the vehicle. The ambulance body doors shall be equipped with not less than 250 square inches of safety glass area per door. Doors shall be designed for easy release, but an accidental opening shall be prevented by an interlocking system that functions even when doors are not completely closed. Each door shall have effective compression or overlapping seals to prevent the entry 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.

TRANS 157.11 Bumpers, steps, and stepwells. Chassis manufacturer's standard bumpers shall be furnished with the exception of the rear bumpers of Type I and III ambulances. The ambulance shall have a sturdy fullwidth rear vehicular



and body bumper with step, secured to the vehicle's chassis-frame. The rear bumper and step shall be adequate to support the test weight of 500 pounds without flexing or buckling. A step shall be installed at the back (loading) door opening, if the patient compartment floor is more than 18 inches above the ground. The step installation shall be of equal distance plus or minus 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 antiskid open grating metal, and may be equipped with folding style step. These steps may not be located or exposed to the interior of the ambulance when the doors are closed. All necessary steps shall be at least the width of the door opening for which they are provided. The steps shall have a minimum depth of 5 inches, and a maximum depth of 10 inches tread.

TRANS 157.12 Tires and wheels.

(1) Each tire shall have not less than 1/16 inch tread depth. The depth shall be measured at 2 points not less than 15 inches apart in any major tread groove at or near the center of the tire.

(2) Wheels, tires and brake drum assemblies shall be in balance up to speeds of 70 miles per hour.

(3) During the period between November 15 and April 1, snow tires with studs may be installed on an ambulance.

(4) Tire chains of reasonable proportions may be used on any ambulance where required for safety because of snow, ice or other conditions that may cause a vehicle to skid.

(5) Recapped tires may not be installed on any ambulance.

TRANS 157.13 Batteries. All ambulances shall be equipped with a 2-battery system. All batteries should be securely attached to prevent dislocation in the event of an accident. When mounted outside of the engine compartment the battery shall be contained in a closed, drained, weather-tight and vented compartment in the body skirt, which shall retain the battery in the event of an upset or rollover. The battery compartment door or cover shall be secured by a latch. The battery cables may not be spliced.

TRANS 157.14 Environmental climatic equipment.

All ambulances shall be equipped with a complete climate environmental system to supply and maintain clean air conditions and an inside temperature at a comfortable level in both driver and patient compartments. The various systems for heating, ventilating and air conditioning may be separate or combination systems that permit independent control of environment within each compartment. The driver and patient compartment environments may not be dependent upon one another in any way.

TRANS 157.15 Lighting, ambulance exterior and interior.

(1) Exterior lighting. The basic exterior vehicle lighting shall include: headlamps, parking lamps, directional signal lamps, tail and stoplamps, sidemarker lamps, license plate lamp, backup lamps, hazard warning lamp, clearance lamps, when applicable, emergency warning lamp, corner warning lamps, floodlamps, and spotlight. Alternating headlamps are not permitted.

(2) Warning lamps. (a) 1. A roof top-mounted 360 degrees rotating dome red beacon lamp having a minimum of 35,000 candle power; or

2. At least 2 rotating dome red beacon lamps mounted at or below the roof line each having a minimum of 35,000 candle power and which in combination are visible at 360 degrees.

(b) Alternate pattern, flashing red lamps shall be located on the upper body or on the roof corners. The corner warning lamps, dome or tunnel style showing two on the front facing front, and two on the rear facing rearward shall be the seal beam type having a minimum of 500 candle power output each.

(c) In addition, at least 2 regular red flashing warning lamps shall be located in, on, behind or in front of the vehicle's radiator grill. The lamps shall be so designed and mounted as to be plainly visible and understandable from a distance of 500 feet both during normal sunlight and during hours of darkness.

(d) Warning lamps may not be obstructed by open doors.

(e) Notwithstanding the provisions of this chapter relating to the color of warning lamps installed on ambulances, any ambulance may be equipped with any color warning lamp authorized by statute.

(3) Floodlamps and loading lights (exterior). Sealed flood lighting units shall be located at the rear, left and right sides of the ambulance. Floodlamps shall be integrally mounted below the roof line but not less than 75 inches above the ground and unobstructed by open doors. Each flood lamp shall have a minimum of 800 candlepower output. Flood lighting at the rear shall be arranged to illuminate the ground area immediately surrounding the loading doors. The switches shall be shielded and shall control each side separately. (See Figures I, II and III for illustration of lighting placement and installation.)

(4) Ambulance interior lighting. (a) The basic interior ambulance lighting shall include: driver compartment dome lamp, instrument panel lamps and indicators, master switch panel or console lamps, other warning lamps, door-open indicator, and glove box lamp, when applicable.

(b) The patient compartment shall include: overhead or dome lighting and on Type I and III vehicles, step-well lamp(s), and switch panel lighting.

(c) The lighting shall be designed and located so that no glare is reflected from surrounding areas to the driver's eyes or line of vision, from instrument and switch control panels or other area that are illuminated while the vehicle is in motion.

(5) Patient compartment illumination. (a) Normal white illumination in all patient areas shall be not less than 15 foot candle intensity measured all along the center line of the clear floor with doors open and all ambient light obliterated. Patient compartment lighting shall also be capable in combination, or by separate means, of providing 35 to 55 foot candle intensity, when measured over at least 90 percent of the surface area on top of the litters and squad bench. Variable lighting levels shall be controlled by the EMT by switches or with a fireproofed Underwriter's Laboratory approved rheostat.

(b) Only white colored lamps or lenses may be used in the patient compartment. The normal patient compartment lamps and stepwell lamps shall be automatically activated when the entrance doors are opened or when otherwise controlled by driver's master switch. Interim fixtures (interior) shall be nearly flush mounted and may not protrude more than a nominal 1.5 inches.

(c) Fluorescent lighting that operates on 12 volts may be used. The lamps may not extend more than 4 inches from the mounting surface. These fixtures may be mounted at the intersection of the ceiling and walls.

TRANS 157.16 Siren - public address system.

(1) Siren. The combined siren (with warning lights permitted) and public address system shall include radio amplification capability, complete with speaker and noise cancelling microphone. The siren control functions and related characteristic sound patterns shall consist of manual and automatic wail, yelp, and "HiLo" sound when applicable or specified. The siren unit shall be capable of powering a nominal 80 watts RMS with one speaker and not less than 130 watts RMS with a two speaker load. In voice operation, the power output shall be a nominal 35 watts RMS into one speaker and a nominal 170 watts RMS into two speaker system, with not more than 10 percent voice distortion from 300 to 3,000 Hz. The public address amplifier shall be independent of the two-way (mobile) radio except that a common microphone and control housing group may be used. The siren assembly as installed in the vehicle shall not cause radio noise interference.

(2) Speakers. (a) A single speaker (siren/public address/ radio) having a minimum rating of 100 watts RMS with a maximum output to be delivered each 14.5 VDC input shall be installed outside on the vehicle. Design and construction shall ensure that no parts will become loose and shall withstand the strains, jars, vibrations, shocks and other similar conditions incident to service operations. Installation shall be on reinforced mounting to prevent drumming and vibration. The speaker shall be mounted facing forward, located near the longitudinal center line and front section of the emergency vehicle. Speaker location shall permit servicing of the vehicle without removing the speakers or interfering with the intent or vision of the warning lights.

TRANS 157.17 Communications. An ambulance shall have hospital radio contact capability on a hospital ambulance frequency that directly connects to the hospital emergency department.

TRANS 157.18 Color, paint, and finish applicable to ambulance displaying "Star of Life" symbol.

The exterior color of the ambulance shall be basically white in combination with orange stripe and blue lettering and emblems. An orange stripe not less than 6 inches nor more than 14 inches wide shall encircle the entire ambulance body configuration at the belt line (below the lowest edge of cab windows). This band when viewed horizontally shall appear as a stripe nearly parallel to the road.

TRANS 157.19 Lettering and markings applicable to ambulances displaying the "Star of Life" symbol.

The material for the emblems and markings shall be applied using reflectorized material. The reflective color used shall be blue and white. When applicable the emblems and markings shall be of the type, size, color and location as follows:

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

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

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

(b) The blue "Star of Life" to be not less than 16 inches on a white field.

(c) The "Star of Life" emblem may be provided on each window glass of the rear doors without the white field when space is limited.

TRANS 157.20 Color, lettering and markings on ambulances that do not display the "Star of Life" symbol.

(1) Any ambulance on which the "Star of Life" symbol is not displayed may be painted any color or combination of colors and shall bear the lettering and markings prescribed in sub. (2).

(2) The material for lettering and marking shall be applied in a color contrasting with the color of the ambulance. The use of reflectorized material for the lettering and markings is preferred, but is not mandatory. When applicable, the lettering and markings shall be of the type, size, color and location as follows:

(a) Front markings. The word "AMBULANCE" or "RESCUE SQUAD" in block letters, not less than 4 inches high shall be centered above the grill. The use of mirror image lettering on the front marking is preferred, but is not mandatory.

(b) Side and rear markings. The word "AMBULANCE" or "RESCUE SQUAD" shall be in block letters of not less than 6 inches in height placed on each side and on the rear of the vehicle body.

SUBCHAPTER III MEDICAL AND SURGICAL EQUIPMENT

TRANS 157.21 Stretchers, cots and patient restraints.

(1) Every ambulance shall be equipped with the following: one sturdy, lightweight, all-level style 1 cot for the primary patient, and a style 30 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 through other narrow areas or equivalent. Stretchers, cots, and litters shall conform to the dimensions of Table I. The 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.

TABLE I

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
Style 2 -- Wheeled Cot-Bench (Non-Elevating)	73	20	19
Style 3 -- Folding Stretcher or Combination Stretcher Chair	73 1/2	19	8 1/4

(2) At least 3 strap-type restraining devices (chest, hip and knee) shall be provided for each stretcher, cot and litter to prevent longitudinal or transverse dislodgement of the patient during transit. Restraining straps shall be made of nylon and shall be at least 2 inches in width. The straps also shall be constructed as a 2-piece assembly with quick release buckles and shall be removable for easy cleaning.

TRANS 157.22 Suction aspirator system.

(1) An engine vacuum operated or electrically powered suction aspirator system shall be provided for the primary patient. The installed suction system shall be powerful enough to provide an air flow of at least 30 liters per minute (1.06 cubic feet per minute) at the end of the delivery tube and a vacuum of at least 300 millimeters (11.811 inches) of mercury to be reached within 4 seconds after the tube is clamped. The suction line shall be securely fastened to prevent damage, but remain accessible for inspection and repair. The engine vacuum type aspirator system shall be connected to check valve and reservoir chamber having a volume of not less than 575 cubic inches, in line between the vacuum source and the aspirator. Aspirator suction shall be connected to a single, plug-in, self-sealing valve. The suction line connection shall be a labeled, plug-in outlet located near the oxygen outlets, but far enough away to permit easy handling of necessary component parts. The suction system shall include 2 mating outlet fittings or a yoke for the valve connection. The aspirator unit shall be securely mounted and located near the primary patient (action area). The vacuum indicator gauge shall be approximately 3 inches (+ 1/4 inch) in diameter, with readout increments of not less than 10 mm. Hg., and numerical markers at least every 100 mm. Hg. The total range shall be at least 0 to 760 mm. Hg. The vacuum adjustor/shutoff valves, either in combination or separately controlled, shall control vacuum setting within 10 mm. Hg. and discontinue aspiration instantly. The collecting bottle shall be nonbreakable and transparent with not less than 500 cc holding capacity. One spare nonbreakable suction collecting bottle shall be stored nearby if a disposable bag is not used. The following accessories shall be furnished and stored readily available. One suction rinsing water bottle; one semirigid pharyngeal suction tip (nonmetallic); spare suction tip and catheters; one Y connector for tracheal suctioning, one three meters (approximately 10 feet) of translucent, wide bore, nonkinking suction tubing (reasonably thick walled to prevent its collapse under high suction); and all other devices or accessories specified or required for a ready-to-use aspiration system.

(2) Every ambulance shall be equipped with a portable suction unit providing a vacuum of at least 380 mm. Hg (15 inches of mercury) and a free airflow rate of at least 15 liters per minute. Portable canister (Freon) suction units are not allowed. Gas or electrically powered units shall be capable of providing at least 30 minutes of continuous suction at the required vacuum and flow levels. The portable suction unit shall be fitted with wide bore, clear, nonkinking suction tubing and rigid pharyngeal suction tip (nonmetallic) and applicable accessories and controls.

TRANS 157.23 Oxygen equipment and test.

(1) The ambulance shall have a hospital type piped oxygen system capable of storing and supplying a minimum of 3,000 liters of medical oxygen. The main oxygen ( $O_2$ ) supply shall be provided by using a single tank ("M" size cylinder). The oxygen cylinders shall be located in a storage compartment. The cylinder controls shall be accessible from inside the vehicle. The pressure gauge shall be visible from the EMT's seat or squad bench and from the site where the cylinder change is accomplished. Cylinder changing wrenches shall be furnished, chained, and clipped within the oxygen cylinder compartment. The piped oxygen system shall include, but not be limited to: a reducing valve, pressure regulator preset to 50 PSI line pressure installed at the cylinders, and nonferrous piping and low pressure hoses suitable for medical oxygen. Oxygen piping shall be concealed, and not exposed to the elements or damage, securely supported, and readily accessible for inspection and replacement. Oxygen shall be piped to self-sealing outlets. One duplex oxygen outlet station for the primary patient shall be located on the action wall recessed area and one oxygen outlet for, and at the secondary patient. The oxygen wall outlet for the primary patient shall be equipped with a plug-in flowmeter, humidifier, and delivery tube located within 40 inches of the EMT's seat. The second oxygen wall outlet will be used for quick disconnect plug-in devices not requiring humidification. Outlets shall be adequately marked and identified and not interfere with the suction outlet. The entire system shall be leak tested.

(2) Space shall be provided for a portable oxygen unit. It shall be located near a patient compartment door, reachable from outside the ambulance. A portable oxygen ( $O_2$ ) unit of at least 300 liter ("D" size cylinder) shall be equipped with a yoke, pressure gauge, flowmeter (not gravity dependent), delivery tube and oxygen masks. The unit shall be capable of delivering an oxygen flow of at least 15 liters per minute. Portable cylinders or kits shall be secured with quick release securing fittings. Oxygen masks (with or without



bags) shall be semi-open, valveless, transparent, easy to clean and decontaminate, or shall be disposable in sizes for adults, children and infants.

(3) In addition to 3 oropharyngeal tubes (airways: adult, child, and infant) which shall be readily accessible, 2 portable, artificial ventilators (a squeeze bag-valve-mask with face holder in adult and infant models) shall be installed. Bag-valve-masks shall be capable of oxygen enrichment. Masks shall be transparent to permit rapid recognition of color change, vomiting, and breathing.

(4) The oxygen flowmeters on all oxygen systems, main supply and portable units shall be tested by the inspector to determine whether the liter flow that is set on the meter is actually being delivered to the patient. A second flowmeter test device will be placed in series to assume the primary patient position. The oxygen will be started and set to deliver 8 liters. A flow rate that is within plus or minus 10 percent of the set flow is acceptable. Any flowmeter found to be operating with an error in excess of plus or minus 10 percent of the set flow shall be considered defective. The inspector shall order the registrant to replace any flowmeter found to be defective.

TRANS 157.24 Extrication equipment.

(1) Every ambulance shall be equipped with a compartment containing at least 10 cubic feet of space for the storage of extrication equipment and assorted small handtools. A single pouch style carrying device or tool box shall be carried for small handtools.

(2) Unless an ambulance is accompanied by a rescue vehicle on every accident call pursuant to a written agreement with a rescue squad, the following equipment shall be carried in the equipment compartment of each ambulance:

- (a) Flares or reflectors.
- (b) Wrench (12 inch adjustable).
- (c) Screwdriver (for slot headed screws).
- (d) Screwdriver (#4 Phillips).
- (e) Hacksaw and 12 inch blades.
- (f) Pliers (10 inch locking grip).
- (g) Sledge hammer (at least 4 pounds).
- (h) Fire axe.
- (i) Wrecking bar (24 inch).

- (j) Crowbar (51 inch with pinch point) or Wisconsin bar.
- (k) Bolt cutter (minimum 1/2 inch jaw opening).
- (l) Portable power jack and spreader tool (minimum 4 ton capacity)
- (m) Shovel.
- (n) Tin snip (double action, 8 inch minimum).
- (o) One one-half inch nylon or propylene rope (at least 20 feet long) or two three-quarter inch manila ropes (at least 50 feet long).
- (p) Hard hat and gloves.
- (q) Safety goggles or face shield.
- (r) Two-Ton Come-A-Long.
- (s) Two lights, portable, battery operated.
- (t) Two rescue pull chains, (10 feet minimum) with grab hooks.

TRANS 157.25 Medical and surgical equipment.

- (1) The ambulance shall be equipped with the following:
  - (a) Bite sticks (at least 3).
  - (b) Universal dressings, Trauma (8 inch x 30 inch) (at least 6).
  - (c) Sterile gauze pads (4 inches x 4 inches) (at least 25).
  - (d) Soft roller self-adhering bandages (Kling) (at least 12).
  - (e) Two rolls of adhesive tape.
  - (f) Two sterile burn sheets.
  - (g) Triangular bandage.
  - (h) Bandage shears.
  - (i) Roll of aluminum foil (18 inches x 25 feet).
  - (j) Two blood pressure cuffs (one adult and one child).
  - (k) Stethoscope.

- (l) Hinged half-ring traction splint (9-inch ring/ 43-inch length):
  - 1. Commercial limb supports.
  - 2. Padded ankle hitch.
  - 3. Traction strap.
- (m) Short and long spine boards.
- (n) Padded board splints (4.5 feet x 3 inches, 2 each; 3 feet x 3 inches, 2 each; 15 inches x 3 inches, 2 each). At the option of the registrant, similar splints of cardboard, plastic, wire ladder or canvas slotted lace-in construction may be carried in place of the 3-foot and 15-inch long board splints.
- (o) Inflatable splints (one set).
- (p) Sterile intravenous agent, preferably in plastic bags, with administrative kits, and:
  - 1. IV holders and hooks for intravenous fluid containers.
  - 2. One detachable type rigid telescoping IV pole and holder that is at least 52 inches high when extended shall be provided for the style 1 cot.
  - 3. Two rear flush type IV ceiling holders or hooks that shall be located at the side and heads of the primary patient's cot and one at the secondary patient's cot or squad bench.
- (q) Compartmentalized pneumatic trouser kit, complete with carrying case, by January 1, 1984.
- (r) Sterile obstetrical kit:
  - 1. Sterile gloves.
  - 2. Scissors.
  - 3. Umbilical cord clamp.
  - 4. Sterile dressings.
  - 5. Towels.
  - 6. Plastic bags.

(s) Poison kit:

1. Syrup of Ipecac.
2. Activated charcoal.

(t) A laryngoscope and set of blades.

(u) One adult and one child size Magill forceps.

TRANS 157.26 Standard mandatory miscellaneous equipment.

(1) Each ambulance shall be equipped with the following:

(a) Fire extinguisher; one 2A10BC unit in a quick-release bracket, mounted in the driver/cab section or body and reachable from outside.

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

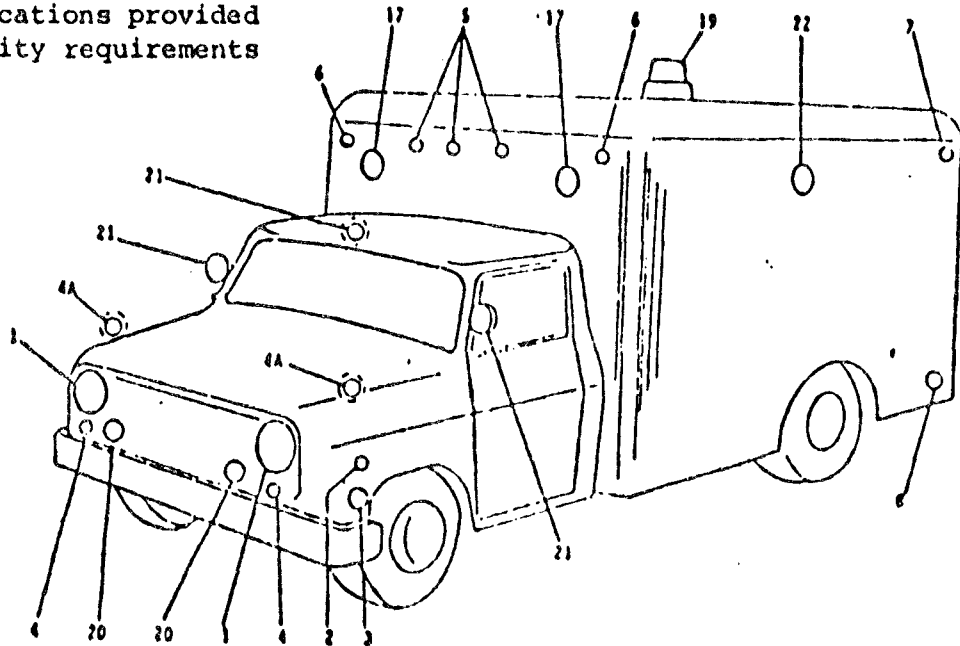
RECOMMENDED LAMP AND REFLECTOR LOCATIONS  
IN ACCORDANCE WITH

TRANS 157

TYPE I

NOTE

Lamps and reflectors may be mounted at other practicable locations provided location and visibility requirements are met.



LEGEND AMBULANCE TYPE I

- 1. Headlamps (2) white (4 optional)
- 2. Front side marker lamps (2) amber
- 3. Front side reflectors (2) amber
- 4. Front turn signal (2) amber
- 4a. Front turn signal lamps (2) amber (optional location)
- 5. Front identification lamps (3) amber
- 6. Front clearance lamps (2) amber
- 7. Rear side marker lamps (2) red
- 8. Rear side reflectors (2) red
- 9. Rear identification lamps (3) red
- 10. Rear clearance lamps (2) red
- 11. Rear reflectors (2) red
- 12. Rear stop tail & turn signal lamps (2) red or amber
- 13. Rear license plate lamp (1) white
- 14. Rear backup lamp (1) white (location optional provided optical requirements are met)
- 17. Front warning lights (2) red
- 18. Rear warning lights (2) red
- 19. Beacons ray or strobe light (1) red [optional- see TRANS 157.15(2)]
- 20. Grill lights (2) red
- 21. Spot lights (clear) optional location (1) roof (2) window pillars
- 22. Flood lights (3); (1) each side, (1) over rear door

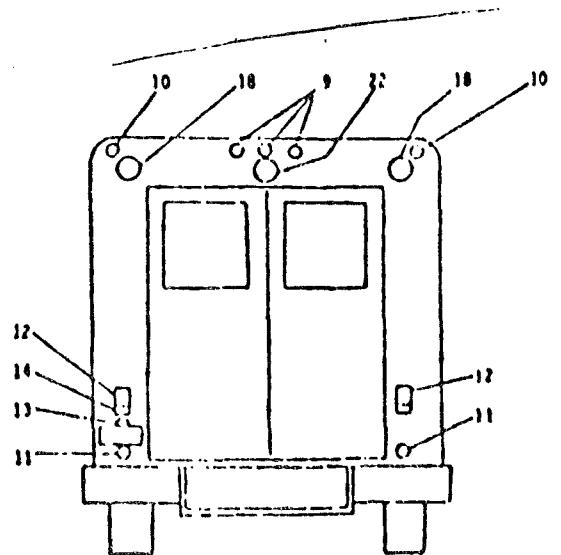


FIGURE I.

(CONVENTIONAL CAB-CHASSIS WITH MODULAR AMBULANCE BODY)

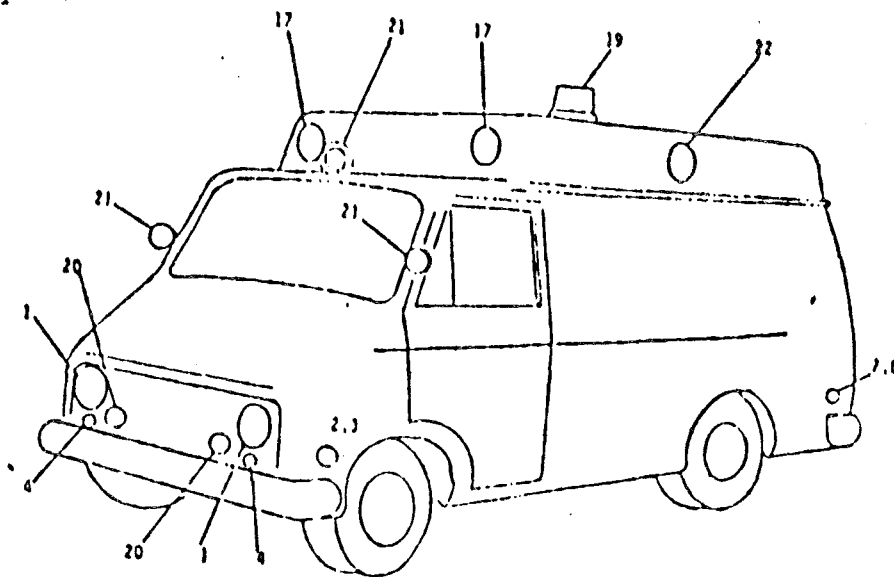
RECOMMENDED LAMP AND REFLECTOR LOCATIONS  
IN ACCORDANCE WITH

TRANS 157

TYPE II

NOTE

Lamps and reflectors may be mounted at other practicable locations provided location and visibility requirements are met.



LEGEND AMBULANCE TYPE II

- 1. Headlamps (2) white (4 optional)
- 2. Front side marker lamps (2) amber
- 3. Front side reflectors (2) amber
- 4. Front turn signal (2) amber
- 7. Rear side marker lamps (2) red
- 8. Rear side reflectors (2) red
- 11. Rear reflectors (2) red
- 12. Rear stop tail & turn signal lamps (2) red or amber
- 13. Rear license plate lamp (1) white
- 14. Rear backup lamp (1) white (location optional provided optical requirements are met)
- 17. Front warning lights (2) red
- 18. Rear warning lights (2) red
- 19. Beacons ray or strobe light (1) red [optional- see TRANS 157.15(2)]
- 20. Grill lights (2) red
- 21. Spot lights (clear) optional location (1) roof (2) window pillars
- 22. Flood lights (3): (1) each side, (1) over rear door

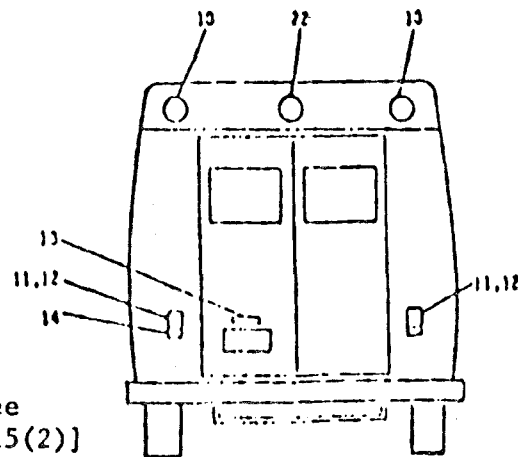


FIGURE II.

(STANDARD VAN, FORWARD CONTROL, INTEGRAL CAB-BODY AMBULANCE)

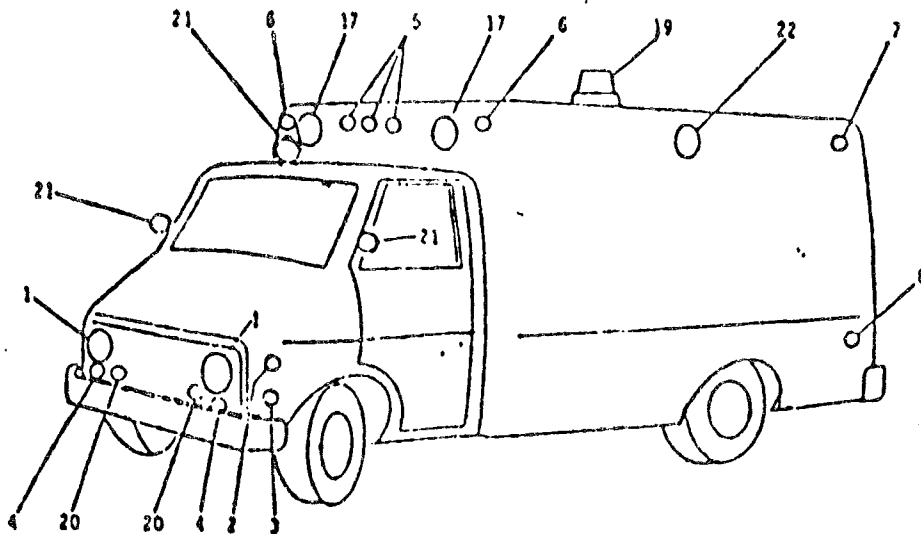
RECOMMENDED LAMP AND REFLECTOR LOCATIONS  
IN ACCORDANCE WITH

TRANS 157

TYPE III

NOTE

Lamps and reflectors may be mounted at other practicable locations provided location and visibility requirements are met.



LEGEND AMBULANCE TYPE III

1. Headlamps (2) white (4 optional)
2. Front side marker lamps (2) amber
3. Front side reflectors (2) amber
4. Front turn signal (2) amber
5. Front identification lamps (3) amber
6. Front clearance lamps (2) amber
7. Rear side marker lamps (2) red
8. Rear side reflectors (2) red
9. Rear identification lamps (3) red
10. Rear clearance lamps (2) red
11. Rear reflectors (2) red
12. Rear stop tail & turn signal lamps (2) red or amber
13. Rear license plate lamp (1) white
14. Rear backup lamp (1) white (location optional provided optical requirements are met)
17. Front warning lights (2) red
18. Rear warning lights (2) red
19. Beacons ray or strobe light (1) red [optional- see TRANS 157.15(2)]
20. Grill lights (2) red
21. Spot lights (clear) optional location (1) roof (2) window pillars
22. Flood lights (3): (1) each side, (1) over rear door

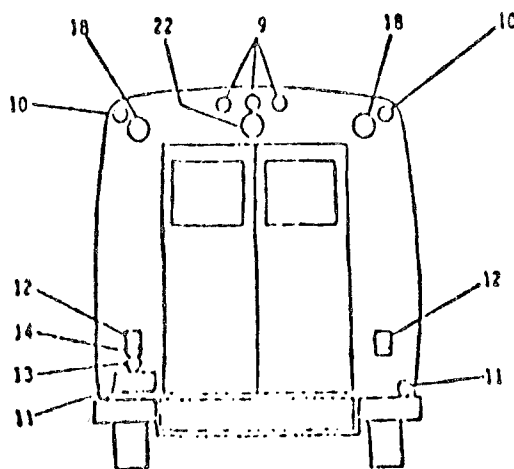
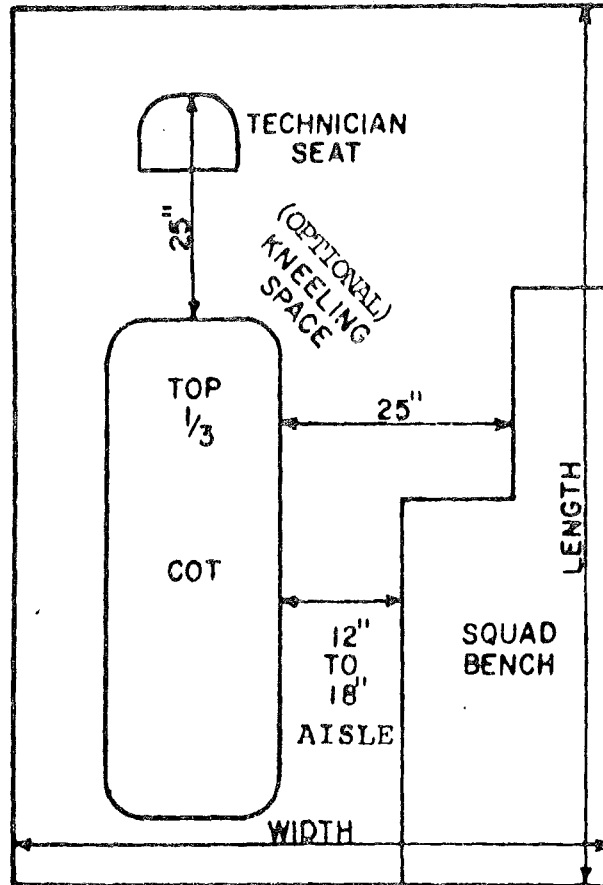


FIGURE III.

TRANS 157

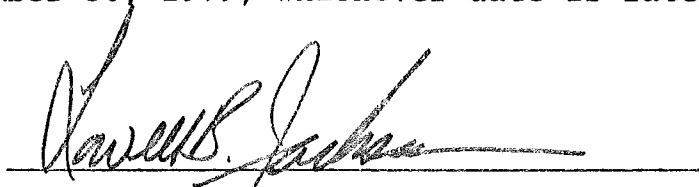


Floor Plan for measuring the patient compartment interior dimensional surfaces.

FIGURE IV



The rules created in this order shall take effect on publication or on December 30, 1979, whichever date is later.

A handwritten signature in cursive script, appearing to read "Lowell B. Jackson", is written over a horizontal line.

Secretary  
Wisconsin Department of Transportation

Dated: NOVEMBER 19, 1979

