

July 5, 1973

MVD 17

Attorney General Robert W. Warren
123 W. Washington Avenue
Room 413
Madison, Wisconsin 53702

Dear Attorney General Warren:

The Division of Motor Vehicles has filed with the Revisor of Statutes new rules relating to the transportation of school children.

Pursuant to section 227.025 of the Wisconsin Statutes, the Division has utilized several standards established by technical societies and organizations of recognized national standing by incorporation of such standards in its rules by reference.

In order for the Division to utilize said references the attorney general and the revisor of statutes must give their consent.

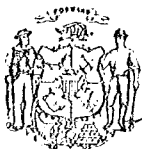
Enclosed is a list of the standards the agency desires to incorporate by reference. As you will observe, several of these standards have been previously approved. For those that have not been previously approved, I have attached copies of the standards.

Sincerely,

Gary L. Poulson
Assistant Revisor

Enclosure

GLP:jk



State of Wisconsin \ DEPARTMENT OF TRANSPORTATION



June 25, 1973

DIVISION OF MOTOR VEHICLES
4802 SHEBOYGAN AVENUE
MADISON, WISCONSIN 53702

Mr. James Burke
Revisor of Statutes
Room 411, W. Capitol
Madison, Wisconsin

Dear Mr. Burke:

RE: REFERENCES IN CHAPTER MVD-17, WISCONSIN
ADMINISTRATIVE CODE

The following references are used in our proposed revision of above stated code. Because the revision is a complete repeal and recreation, all references are included in this letter, although most of them were approved in the revision of 1967 as amended in 1969.

Two copies of new references are included herewith. Old references are notated as having been previously approved.

Beranek-Armour-ATA Equivalent Tone method - previously approved.

Tire and Rim Association - Rim sizes - previously approved.

Society of Automotive Engineers

- (1) Standard J658 - Service Brake Performance - previously approved.
- (2) Standard J880 - Brake Rating System - Commercial Vehicles - previously approved.
- (3) Standard J586c - Stop Lamp Specification - 2 copies attached.
- (4) Standard J588e - Turn Signal Specification - 2 copies attached.
- (5) Standard J593d - Back Up Lamp Specification - 2 copies attached.
- (6) Standard J787b - Seat Belt Anchorage - previously approved.
- (7) Standard J800b - Seat Belt Installation - previously approved.
- (8) Standard J555a - Motor Coach Wiring - previously approved.
- (9) Supplement to Handbook 34SAE - previously approved.

School Bus Manufacturers Institute

- (1) Specifications for Static Load Test - previously approved.
- (2) Bus Heater Marking - previously approved.

U.S. Department of Transportation

- (1) Federal Motor Vehicle Safety Standard #217 Bus Window Retention and Release - 2 copies attached.
- (2) Bureau of Motor Carrier Safety Standard 393.95 Emergency Warning Devices - 2 copies attached.

General Services Administration

- (1) Color Specifications #13432 and #17038 - previously approved.
- (2) First Aid Kit Specifications GGK-291a - previously approved.
- (3) Floor Covering Specification ZZ-M71b - previously approved.

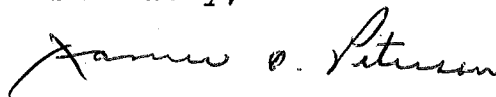
National Committee on Safety Education - School bus sign layout - previously approved.

American National Standards Institute Code Z26.1 - Safety Glass Specifications for Windshield and previously approved.

U.S. Department of Commerce - Commercial Standard C45-60 for Douglas Fir Plywood - previously approved.

Your approval of these references will be greatly appreciated. If you have any questions regarding these references, please contact Mr. Robert Cromey of my staff at 266-0214.

Sincerely,



JAMES O. PETERSON
Administrator

JOP:rcd

cc: Atty. Gen. Robert Warren
Colonel Lew V. Versnik
Major John Sterba
Mr. Robert Cromey
Mr. Harold Meyer

shall have an indexing base and the socket shall be designed so that bulbs with nonindexing bases cannot be used.

3.6 Photometric Requirements

3.6.1 All beam candlepower measurements shall be made with the incandescent filament (s) of the signal lamp (s) at least 10 ft from the photometric screen. The H-V axis shall be taken as parallel to the longitudinal axis of the vehicle. When compartments or lamps are photometered together, the H-V axis shall intersect the midpoint between the optical centers (filament).

3.6.2 Beam candlepower measurements of multiple compartment lamp or multiple lamp arrangements shall be made by either of the following methods:

(a) All compartments or lamps may be photometered together provided that a line from the optical axis (filament centers) of each compartment or lamp to the center of the photometer sensing device does not make an angle of more than 0.6 deg with the photometer (H-V) axis.

(b) Each compartment or lamp may be photometered separately by aligning its axis with the photometer and adding the value at each test point.

3.6.3 Table 1 lists design candlepower requirements for a tail lamp.

4. *Installation Requirements*—The following requirements apply to the device as used on the vehicle and are not part of the laboratory test requirements and procedures.

Visibility of the tail lamp shall not be obstructed by any part of the vehicle throughout the photometric test angles for the lamp, unless the lamp is designed to comply with all photometric and visibility requirements with these obstructions considered. Signal from lamps on both sides of the vehicle shall be visible through a horizontal angle from 45 deg to the left to 45 deg to the right. Where more than one lamp or optical area is lighted on each side of the car, only one such area on each side need comply. To be considered visible, the lamp must provide an unobstructed projected illuminated area of outer lens surface, excluding reflex, at least 2 sq in. in extent, measured at 45 deg to the longitudinal axis of the vehicle.

APPENDIX

As a matter of information, attention is called to typical sockets shown in SAE J567.

TABLE 1—MINIMUM DESIGN CANDLEPOWER REQUIREMENTS

Test Points, deg		Lighted Sections		
		1	2	3
10U and 10D	10L	0.3	0.5	0.7
	V	0.5	1.0	1.5
	10R	0.3	0.5	0.7
5U and 5D	20L	0.3	0.5	0.7
	10L	0.8	1.3	2.0
	5L	1.3	2.0	3.0
	V	1.8	3.0	4.5
	5R	1.3	2.0	3.0
	10R	0.8	1.3	2.0
	20R	0.3	0.5	0.7
H	20L	0.4	0.7	1.0
	10L	0.8	1.3	2.0
	5L	2.0	3.5	5.0
	V	2.0	3.5	5.0
	5R	2.0	3.5	5.0
	10R	0.8	1.3	2.0
Maximum		15	20	25

NOTES:

- Specifications are based on laboratories using accurate, rated bulbs during testing.
- Lamps designed for use in both 6V and 12V systems shall be tested with 12V bulbs. Lamp designed to operate on the vehicle through a resistor or equivalent shall be photometered with the listed design voltage of the design source applied across the combination of resistance and filament.
- A multiple device tail lamp gives its indication by two or more separately lighted section which may be separate lamps, or areas that are joined by common parts. The photometric value are to apply when all sections which provide the tail signal are considered as a unit except when the dimensions between optical centers exceed those given in paragraph 3.1. For a separate lamp arrangement, where lamps are interchangeable, each lamp should be of approximately the same performance.
- When a tail lamp is combined with the turn signal lamp or stop lamp, the signal lamp or stop lamp shall not be less than three times the candlepower of the tail lamp at any test point on a above horizontal; except that at H-V, H-5L, H-5R, and 5U-V, the signal lamp or stop lamp shall not be less than five times the candlepower of the tail lamp. If a multiple compartment or multiple lamp arrangement is used and the distance between optical axes for both the tail lamp and the turn signal or stop lamp functions is within the dimensions specified in paragraph 3.1, the ratios of the signal lamps or stop lamps to the tail lamp shall be computed with all the compartments or lamps lighted. If a multiple compartment or multiple lamp arrangement is used and the distance between optical axes for one of the functions exceeds the dimensions specified in paragraph 3.1 the ratio shall be computed for only those compartments or lamps where the tail lamp and turn signal or stop lamp are optically combined.
- A tail lamp shall not exceed the maximum candlepower at night over any area larger than that generated by a 1/4 deg radius, within a solid cone angle from 20L to 20R and from H to 10U.

pg 1 (3)

STOP LAMPS — SAE J586c

SAE Standard

Report of the Lighting Division approved February 1927 and last revised by Lighting Committee August 1970.

1. *Scope*—This standard provides test methods and requirements for stop lamps.

2. Definitions

2.1 *Stop Lamps*—Lamps giving a steady light to the rear of a vehicle, or train of vehicles to indicate the intention of the operator of a vehicle to stop or diminish speed by braking.

2.2 *Multiple Compartment Lamp*—A device which gives its indication by two or more separately lighted areas which are joined by one or more common parts such as a housing or lens.

2.3 *Multiple Lamp Arrangement*—An array of two or more separate lamps on each side of the vehicle which operate together to give a signal.

3. Laboratory Requirements

3.1 A multiple compartment lamp or multiple lamps may be used to meet the photometric requirements of a stop lamp. If a multiple compartment or multiple lamps are used and the distance between the optical axes (filament centers) does not exceed 22 in. for two compartment or lamp arrangements and does not exceed 16 in. for three compartment or lamp arrangements, then the combination of the compartments or lamps must be used to meet the photometric requirements for the corresponding number of lighted sections (Table 1). If the distance between optical axes exceeds the above dimensions, each compartment or lamp shall comply with the photometric requirements for one lighted section (Table 1).

For vehicles of 80 in. in overall width, a maximum of two lamps and/or compartments per side may be mounted closer together than 22 in. providing that each compartment and/or lamp meets the single compartment photometric requirements listed in Table 1 and has a minimum effective projected luminous lens area of 12 sq in. Each lamp and/or compartment utilized in this manner shall meet the one lighted section value for all functions for which it is designed.

3.2 The effective projected luminous lens area of a single compartment lamp measured on a plane at right angles to the axis of a lamp must be at least 8 sq in.

3.3 If a multiple compartment lamp or multiple lamps are used to meet the photometric requirements of a stop lamp, the effective projected luminous lens area of each compartment or lamp shall be at least 3 1/2 sq in., provided the combined area is at least 8 sq in.

3.4 The following sections from SAE J575 are a part of this standard:

- 3.4.1 Section B—Samples for Test
- 3.4.2 Section C—Lamp Bulbs
- 3.4.3 Section D—Laboratory Facilities
- 3.4.4 Section E—Vibration Test
- 3.4.5 Section F—Moisture Test
- 3.4.6 Section G—Dust Test
- 3.4.7 Section H—Corrosion Test
- 3.4.8 Section J—Photometry

3.4.9 Section L—Warpage Test on Devices with Plastic Lenses, except that lamp is to be operated 5 min on and 5 min off until the total time equals 1 hr. If the tail lamp and/or side marker lamps are incorporated in the same device, they shall be operated continuously during the test. (The test is to be conducted in a circulating air type oven.)

3.5 Plastic Materials—Any plastic materials used in optical parts shall comply with the requirements set forth in SAE J576.

3.6 Color Test—The color of the light from stop lamps shall be red. (See SAE J578.)

3.7 If the stop lamp is optically combined with the tail lamp and a two-filament bulb is used, the bulb shall have an indexing base and the socket shall be designed so that bulbs with nonindexing bases cannot be used.

3.8 Photometric Requirements

3.8.1 All beam candlepower measurements shall be made with the incandescent filament(s) of the signal lamp(s) at least 10 ft from the photometer screen. The H-V axis shall be taken as parallel to the longitudinal axis of the vehicle. When compartments or lamps are photometered together, the H-V axis shall intersect the midpoint between the optical center (filament).

3.8.2 Beam candlepower measurements of multiple compartment lamp or multiple lamp arrangements shall be made by either of the following methods:

(a) All compartments or lamps may be photometered together provided that a line from the optical center (filament) of each compartment or lamp to the center of the photometer sensing device does not make an angle of more than 0.6 deg with the photometer (H-V) axis.

(b) Each compartment or lamp may be photometered separately by aligning its axis with the photometer and adding the value at each test point.

3.8.3 Table 1 lists design candlepower requirements for a stop lamp.

4. Installation Requirements—The following requirements apply to the device as used on the vehicle and are not part of the laboratory test requirements and procedures.

4.1 Visibility of the stop lamp shall not be obstructed by any part of the vehicle throughout the photometric test angles for the lamp unless the lamp is designed to comply with all photometric and visibility requirements with these obstructions considered. Signal from lamps on both sides of the vehicle shall be visible through a horizontal angle from 45 deg to the left to 45 deg to the right. Where more than one lamp or optical area is lighted on each side of the car, only one such area on each side need comply. To be considered visible, the lamp must provide an unobstructed projected illuminated area of outer lens surface, excluding reflex, at least 2 sq in. in extent, measured at 45 deg to the longitudinal axis of the vehicle.

4.2 When a stop signal is optically combined with the turn signal, the circuit shall be such that the stop signal cannot be turned on in the turn signal which is flashing.

APPENDIX

As a matter of information, attention is called to typical sockets shown in SAE J567.

TABLE 1—MINIMUM DESIGN CANDLEPOWER REQUIREMENTS

Test Points, deg		Lighted Sections		
		1	2	3
10U and 10D	10L	10	12	15
	V	25	30	35
	10R	10	12	15
5U and 5D	20L	10	12	15
	10L	30	35	40
	5L	50	60	70
	V	70	82	95
	5R	50	60	70
	10R	30	35	40
H	20R	10	12	15
	20L	15	18	20
	10L	40	47	55
	5L	80	95	110
	V	80	95	110
	5R	80	95	110
Maximum	10R	40	47	55
	20R	15	18	20
		300	360	420

NOTES:

- Specifications are based on laboratories using accurate, rated bulbs during testing.
- Lamps designed for use in both 6V and 12V systems shall be tested with 12V bulbs. Lamps designed to operate on the vehicle through a resistor or equivalent shall be photometered with the listed design voltage of the design source applied across the combination of resistance and filament.
- A multiple device signaling unit gives its indication by two or more separately lighted sections which may be separate lamps, or areas that are joined by common parts. The photometric valves are to apply when all sections which provide the same signal are considered as a unit except when the dimensions between optical centers exceed those given in paragraph 3.1. For a separate lamp arrangement, where lamps are interchangeable, each lamp should be of approximately the same performance.
- When a tail lamp is combined with the stop lamp, the stop lamp shall not be less than three times the candlepower of the tail lamp at any test point on or above horizontal; except that at H-V, H-5L, H-5R, and 5U-V, the stop lamp shall not be less than five times the candlepower of the tail lamp. If a multiple compartment or multiple lamp arrangement is used and the distance between optical axes for both the tail lamp and stop lamp is within the dimensions specified in paragraph 3.1, the ratio of the stop lamp to the tail lamp shall be computed with all the compartments or lamps lighted. If a multiple compartment or multiple lamp arrangement is used and the distance between optical axes for one of the functions exceeds the dimensions specified in paragraph 3.1, the ratio shall be computed for only those compartments or lamps where the tail lamp and stop lamp are optically combined.
- Stop lamps shall not exceed the listed maximum candlepower at night over any area larger than that generated by a 1/4 deg radius.

MECHANICAL STOP LAMP SWITCH — SAE J249

SAE Recommended Practice

Report of Lighting Committee approved February 1972.

1. Definition—A mechanical stop lamp switch is a mechanically operated device used to energize the stop lamp circuit with operator actuation of the brake pedal.

2. Temperature Test

2.1 To insure basic function, the switch shall be manually cycled for 10 cycles at design electrical load at:

75, ± 10 F	(24, ± 5.5 C)
165, +0, -5 F	(74, +0, -2.8 C)
-25, +5 F, -0 F	(-32, +2.8 C, -0 C)

This is to be done after a 1 h exposure at each of these temperatures. The switch shall be electrically and mechanically operable during each of these cycles.

2.2 This same switch shall be used for the endurance test described below.

3. Endurance Test Setup

3.1 The switch shall be set up to operate its design electrical load.

3.2 The test shall be set up to operate the switches for the prescribed number of completed cycles.

One complete cycle shall consist of energizing and de-energizing the stop lamps with switch travel as specified by the manufacturer. With the switch exercised through its complete travel, it shall be cycled as follows:

TRAVEL RATE—0.4-0.6 in/s (102-152 mm/s) (at make and break).

DWELL TIMES—1.0-2.0 s (circuit closed, lamps on).

1.0-2.0 s (circuit open, lamps off).

3.3 During the test the switch shall be operated at 6.4 V d-c for a 6 V system, 12.8 V d-c for a 12 V system, or 25.6 V d-c for a 24 V system.

These voltages shall be measured at the input termination on the switch. The power supply shall not generate any adverse transients not present in motor vehicles and shall comply with the following specifications:

(a) Output Current—Capable of supplying the continuous current of the design electrical load and inrush current as required by the bulb

TURN SIGNAL LAMPS — SAE J588e

SAE Standard

Report of the Lighting Division approved February 1927 and last revised by Lighting Committee August 1970. Editorial change September 1970.

1. **Scope**—This standard provides test methods and requirements for turn signal lamps.

2. **Definitions**

2.1 **Turn Signal Lamps**—The signaling elements of a turn signal system which indicate a change in direction by giving a flashing light on the side toward which the turn will be made. (For flashing rate and "on" period, see SAE J590.)

2.2 **Multiple Compartment Lamp**—A device which gives its indication by two or more separately lighted areas which are joined by one or more common parts such as a housing or lens.

2.3 **Multiple Lamp Arrangement**—An array of two or more separated lamps on each side of the vehicle which operate together to give a signal.

3. **Laboratory Requirements**

3.1 A multiple compartment lamp or multiple lamps may be used to meet the photometric requirements of a turn signal lamp. If a multiple compartment or multiple lamps are used and the distance between the optical axes (filament centers) does not exceed 22 in. for two compartment or lamp arrangements and does not exceed 16 in. for three compartment or lamp arrangements, then the combination of the compartments or lamps must be used to meet the photometric requirements for the corresponding number of lighted sections (Table 1). If the distance between optical axes exceeds the above dimensions, each compartment or lamp shall comply with the photometric requirements for one lighted section (Table 1).

For vehicles of 80 in. or more in overall width, a maximum of two lamps and/or compartments per side may be mounted closer together than 22 in. providing that each compartment and/or lamp meets the single compartment photometric requirements listed in Table 1 and has a minimum effective projected luminous lens area of 12 sq in. Each lamp and/or compartment utilized in this manner shall meet the one lighted section value for all functions for which it is designed.

3.2 The effective projected luminous area of a single compartment lamp measured on a plane at right angles to the axis of a lamp must be at least 8.0 sq in. for a rear lamp and at least 3.5 sq in. for a front lamp.

3.3 If a multiple compartment lamp or multiple lamps are used to meet the photometric requirements of a rear turn signal lamp, the effective projected luminous lens area of each compartment or lamp shall be at least 3½ sq in. provided the combined area is at least 8 sq in.

3.4 The flashing signal from a double-faced signal lamp shall not be obliterated when subjected to external light rays from either in front or behind, at any and all angles.

3.5 The following sections from SAE J575 are a part of this standard:

3.5.1 Section B—Samples for Test

3.5.2 Section C—Lamp Bulbs

3.5.3 Section D—Laboratory Facilities

3.5.4 Section E—Vibration Test

3.5.5 Section F—Moisture Test

3.5.6 Section G—Dust Test

3.5.7 Section H—Corrosion Test

3.5.8 Section J—Photometry

3.5.9 Section L—Warpage Test on Devices with Plastic Lenses

3.6 **Plastic Materials**—Any plastic materials used in optical parts shall comply with the requirements set forth in SAE J576.

3.7 **Color Test**—The color of the light from turn signal lamps shall be red or yellow (amber) to the rear and yellow (amber) to the front of the vehicle. (See SAE J578.)

3.8 If the turn signal is optically combined with the tail lamp and a filament bulb is used, the bulb shall have an indexing base and the socket shall be designed so that bulbs with nonindexing bases cannot be used.

3.9 **Photometric Requirements**

3.9.1 Rear signals from double-faced turn signal lamps need only meet the candlepower requirements in Table 1 from directly to the left for a left lamp and from directly to the rear to the right for a right lamp. (The intent of the foregoing sentence is to require the manufacturer to provide glare protection for the driver.)

3.9.2 All beam candlepower measurements shall be made with the standard filament (s) of the signal lamp (s) at least 10 ft from the photometer screen. The H-V axis shall be taken as parallel to the

longitudinal axis of the vehicle. When compartments or lamps are photometered together, the H-V axis shall intersect the midpoint between the optical centers (filament).

3.9.3 Beam candlepower measurements of multiple compartment lamp or multiple lamp arrangements shall be made by either of the following methods:

(a) All compartments or lamps may be photometered together provided that a line from the optical center (filament) of each compartment or lamp to the center of the photometer sensing device does not make an angle of more than 0.6 deg with the photometer (H-V) axis.

(b) Each compartment or lamp may be photometered separately by aligning its axis with the photometer and adding the value at each point.

3.9.4 Table 1 lists design candlepower requirements for a turn signal.

4. **Installation Requirements**—The following requirements apply to the device as used on the vehicle and are not part of the laboratory test requirements and procedures:

4.1 Signal lamps on the front and the rear shall be spaced as far apart laterally as practical, so that the direction of turn will be clearly understood.

4.2 The optical axis (filament center) of the front turn signal shall be at least 4 in. from the inside diameter of the retaining ring of the headlamp unit providing the lower beam. If additional lamps are

TABLE 1—MINIMUM DESIGN CANDLEPOWER REQUIREMENTS

Test Points, deg		Red Lighted Sections			Yellow Lighted Sections		
		1	2	3	1	2	3
10U and 10D	10L	10	12	15	25	30	35
	V	25	30	35	60	75	90
	10R	10	12	15	25	30	35
5U and 5D	20L	10	12	15	25	30	35
	10L	30	35	40	75	88	100
	5L	50	60	70	125	150	175
	V	70	82	95	175	205	235
	5R	50	60	70	125	150	175
	20R	30	35	40	75	88	100
H	20L	15	18	20	35	45	50
	10L	40	47	55	100	120	140
	5L	80	95	110	200	240	275
	V	80	95	110	200	240	275
	5R	80	95	110	200	240	275
	10R	40	47	55	100	120	140
	20R	15	18	20	35	45	50
Maximum—Rear Lamps Only		300	360	420	750	900	1050

NOTES:

1. Specifications are based on laboratories using accurate, rated bulbs during testing.
2. Lamps designed for use in both 3V and 12V systems shall be tested with 12V bulbs. Lamps designed to operate on the vehicle through a resistor or equivalent shall be photometered with the listed design voltage of the design source applied across the combination of resistance and filament.

3. A multiple device signaling unit gives its indication by two or more separately lighted sections which may be separate lamps, or areas that are joined by common parts. The photometric values are to apply when all sections which provide the same signal are considered as a unit except when the dimensions between optical centers exceed those dimensions given in paragraph 3.1. For a separate lamp arrangement, where lamps are interchangeable, each lamp should be of approximately the same performance.

4. When a tail lamp or parking lamp is combined with the turn signal lamp, the signal lamp shall not be less than three times the candlepower of the tail lamp or parking lamp at any test point on or above horizontal, except that at H-V, H-5L, H-5R, and 5U-V, the signal lamp shall not be less than five times the candlepower of the tail lamp or parking lamp. If a multiple compartment or multiple lamp arrangement is used and the distance between optical axes for one of the functions exceeds the dimensions specified in paragraph 3.1, the ratio shall be computed for only those compartments or lamps where the tail lamp (parking lamp) and turn signal are optically combined.

5. Lamps intended for the rear of a vehicle shall not exceed the listed maximum candlepower at night over any area larger than that generated by a 1/4 deg radius.

6. If yellow is used as a rear turn signal and the stop lamp is turned off on the signaling side, the minimum values shall be 0.7 times the values shown.

used to supplement (such as fog lamps and/or passing lamps) or are used in lieu of the lower beam, the optical axis (filament center) of the turn signal shall be at least 4 in. from the lighted edge of these lamps unless the ratio of the turn signal lamp to the other lamp is at least 5/1 at H-V, H-5L, H-5R, and 5U-V, and at least 3/1 at other test points above horizontal from 20L to 20R.

4.3 Visibility of the front signal to the front, and the rear signal to the rear, shall not be obstructed by any part of the vehicle throughout the photometric test angles for the lamps unless the lamp is designed to comply with all photometric and visibility requirements with these obstructions considered. In addition, signals from lamps mounted on the left side of the vehicle shall be visible through a horizontal angle of 45 deg to the left, and signals from lamps mounted on the right side of the vehicle shall be visible through a horizontal angle of 45 deg to the right. To be considered visible, the lamp must provide an unobstructed effective projected illuminated area of outer lens surface, excluding reflex, at least 2 sq in. in extent measured at 45 deg to the longitudinal axis of the vehicle.

EXCEPT that on combinations of vehicles, signal lamps on the rear of other than the rearmost vehicle shall be visible from not less than 20 deg to the left to 45 deg to the left for the left signal and from not less than 20 deg to the right to 45 deg to the right for the right signal.

4.4 When a stop signal is optically combined with the turn signal, the circuit shall be such that the stop signal cannot be turned on in the turn signal which is flashing.

4.5 Turn Signal Pilot Indicator

4.5.1 If any signal lamp is not readily visible to the driver, there shall be an illuminated indicator to give him a clear and unmistakable indication that the turn signal system is turned "on". Except on vehicles or combinations of vehicles using variable load flashers, failure of one or more turn signal lamps to operate should be indicated by a "steady on," "steady off," or by a significant change in the flashing rate of the illuminated indicator. The illuminated indicator shall consist of one or more bright lights flashing at the same frequency as the signal lamps.

4.5.2 If the illuminated indicator is located inside the vehicle, for example in the instrument cluster, it should emit a green colored light and have a minimum area equivalent to a 3/16 in. diameter circle.

4.5.3 If the illuminated indicators are located on the outside of the vehicle, for example on the front fenders, they should emit a yellow (amber) colored light and have a minimum projected illuminated area of 0.1 sq in.

4.5.4 The minimum required illuminated area of the indicators specified in paragraphs 4.5.2 and 4.5.3 shall be visible to any tangent on the 95th eyellipse as defined in SAE J941. The steering wheel shall be turned to a straight-ahead driving position and in the design location for an adjustable wheel or column.

APPENDIX

As a matter of information, attention is called to typical sockets shown in SAE J567.

SUPPLEMENTAL HIGH MOUNTED STOP AND TURN SIGNAL LAMPS—SAE J186

Report of Lighting Committee approved July 1970.

1. **Scope**—This SAE Recommended Practice provides definitions, performance requirements, and related test procedures for high mounted lamps intended to supplement stop and rear turn signal lamps described in the SAE J586 and J588.

2. Definitions

2.1 Supplemental high mounted stop and turn signal lamps are additional lamps that are mounted high and possibly forward of the rear mounted tail, stop, and turn signal lamps. The supplemental stop and turn signals may be provided by separate lamps or combined in a single lamp.

2.2 The supplemental stop lamp(s) are additional lamp(s) of a stop lamp system giving a steady warning light to the rear of the vehicle and are intended to provide a signal through intervening vehicles to operators of following vehicles.

2.3 The supplemental turn signal lamps are additional lamps of a turn signal system, which indicate a change in direction by giving a flashing warning signal on the side toward which the vehicle operator intends to turn and are intended to provide a signal through intervening vehicles to operators of following vehicles.

3. Laboratory Requirements

3.1 The following sections of SAE J575 are a part of this recommended practice:

3.1.1 Section B—Samples for Test

3.1.2 Section C—Bulbs

3.1.3 Section D—Laboratory Facilities

3.1.4 Section E—Vibration Test

3.1.5 Section F—Moisture Test

3.1.6 Section G—Dust Test

3.1.7 Section H—Corrosion Test

3.1.8 Section J—Photometric Test. Photometric tests shall be made with the photometer at a distance of at least 10 ft from the lamp. In measuring distances and angles, the center of the light emitting area shall be taken as the light source. The lamp axis shall be taken as the horizontal line through the light source and parallel to what would be the longitudinal axis of the vehicle if the lamp were mounted in its normal position on the vehicle.

3.1.8.1 Candlepower requirements for supplemental stop and turn signal lamps are shown in Table 1.

3.1.9 Section L—Warpage Test on Devices with Plastic Lenses—Procedures for test shall be those described for required stop and/or turn signal lamps.

SAE Recommended Practice

3.2 **Color Test**—The light from the supplemental stop and/or turn signal lamps shall meet the same color requirements as the required lamps. See SAE J578.

3.3 **Plastic Materials**—Any plastic materials used in optical parts shall comply with the requirements set forth in SAE J576.

4. **Installation Requirements**—The following requirements apply to the device as used on the vehicle and are not a part of the laboratory test requirements and procedures.

4.1 Visibility of the signal shall not be obstructed by any part of the vehicle from 10U to 5D and from 10L to 10R unless the lamp is designed to comply with all requirements when the obstruction is considered.

4.2 Supplemental turn signals shall flash simultaneously (not alternately) with the required turn signals.

4.3 A tail lamp function shall not be combined in the supplemental stop and turn signal lamps.

APPENDIX

As a matter of information, attention is called to typical sockets shown in the SAE J567.

TABLE 1—PHOTOMETRIC CANDLEPOWER REQUIREMENTS

Test Points, deg	Candlepower		
	Red, min	Yellow, min	
10U	10L	5	7
	V	10	15
	10R	5	7
5U and 5D	10L	10	15
	5L	15	22
	V	15	22
	5R	15	22
	10R	10	15
H	10L	10	15
	5L	15	22
	V	15	22
	5R	15	22
	10R	10	15
Maximum	60°	90°	

*The lamp shall not exceed the listed maximum candlepower at night over an area larger than that generated by a 1/4 deg radius within a solid cone angle from 10L to 10R and from 10U to 5D.

Pg. 1(5)

CLEARANCE, SIDE MARKER, AND IDENTIFICATION LAMPS—SAE J592e

SAE Standard

Lighting Committee approved January 1937 and last revised by Lighting Committee January 1977

This standard provides test methods and requirements for clearance, side marker, and identification lamps.

Definitions

Clearance Lamps—Lamps which show to the front or rear of a vehicle on the permanent structure of the vehicle as near as possible to the upper left and right extreme edges to indicate the overall height of the vehicle.

Side Marker Lamps—Lamps which show to the side of the vehicle on the permanent structure of the vehicle as near as possible to the front and rear edges to indicate the overall length of vehicle. Additional lamps may also be mounted at intermediate points on the sides of the vehicle.

Combination Clearance and Side Marker Lamps—Single lamps which simultaneously fulfill the requirements of clearance and side marker lamps.

Identification Lamps—Lamps used in groups of three, in a horizontal line, show to the front or rear or both, having lamp spacing not less than 6 in. (15.2 mm) nor more than 12 in. (30.48 mm), mounted on the permanent structure as near as practicable to the centerline and the top of the vehicle to identify certain vehicles.

Laboratory Requirements

General Requirements—The following sections from SAE J575 apply to this standard:

- 1. Section B—Samples for Test
- 2. Section C—Lamp Bulbs
- 3. Section D—Laboratory Facilities
- 4. Section E—Vibration Test
- 5. Section F—Moisture Test
- 6. Section G—Dust Test
- 7. Section H—Corrosion Test
- 8. Section J—Photometric Test
- 9. Section L—Warpage Test on Devices with Plastic Lenses

Color Test—The color of light from front clearance lamps, intermediate side marker lamps, and front identification lamps shall be yellow (amber). The color of light from rear clearance lamps, side marker lamps, and rear identification lamps shall be red. (See SAE J578.)

Plastic Materials—Any plastic materials used in optical parts shall comply with the requirements set forth in SAE J576.

Photometric Requirements—Photometric tests shall be made at

a distance of at least 4 ft (1.2 m). The H-V axis of a clearance or identification lamp shall be taken as parallel with the longitudinal axis of the vehicle. The H-V axis of a side marker lamp shall be taken as normal to the longitudinal axis of the vehicle. The H-V axis of a combination clearance and side marker lamp shall be taken as parallel with the longitudinal axis of the vehicle when checking clearance lamp test points, and normal to this vehicle axis when checking side marker test points. In all cases, the H-V axis shall be taken as parallel to the surface on which the vehicle stands.

Canдела requirements for clearance, identification, and side marker lamps are shown in Table 1. Combination clearance and side marker lamps shall comply with both clearance and side marker minimum candela requirements.

APPENDIX

As a matter of information, attention is called to the typical sockets shown in SAE J567.

TABLE 1—PHOTOMETRIC MINIMUM CANDELA REQUIREMENTS
CLEARANCE, SIDE MARKER, AND IDENTIFICATION LAMPS

	Test Points, deg	Clearance, Side Marker, and Identification Lamps	
		Red ^a	Yellow (Amber)
10U	45Lb V 45Rb	0.25 0.25 0.25	0.62 0.62 0.62
H	45Lb V 45Rb	0.25 0.25 0.25	0.62 0.62 0.62
10D	45Lb V 45Rb	0.25 0.25 0.25	0.62 0.62 0.62

^aThe maximum light output for red clearance and identification lamps is 15 cd. When red clearance lamps are optically combined with stop or turn signal lamps, this maximum applies on or above the horizontal.

^bThe requirements for side markers used on vehicles less than 80 in (2m) wide may be met for inboard test points at a distance of 15 ft (4.5m) from the vehicle on a vertical plane that is perpendicular to the longitudinal axis of the vehicle and located midway between the front and rear side marker lamps.

BACKUP LAMPS—SAE J593d

SAE Standard

Lighting Committee approved August 1947 and last revised January 1971.

Definition—Backup lamps are those which illuminate the road to the rear of the vehicle and provide a warning signal to pedestrian and other drivers when the vehicle is backing up or is about to back up.

General Requirements—The following sections from SAE J575 apply to this Standard:

- Section B—Samples for Test
- Section C—Lamp Bulbs
- Section D—Laboratory Facilities
- Section E—Vibration Test
- Section F—Moisture Test
- Section G—Dust Test
- Section H—Corrosion Test
- Section J—Photometric Test Points

Color Test—The color of the light from a backup lamp shall be white, in accordance with SAE J578.

A backup lamp may project incidental red, amber, or white light

through reflectors or lenses that are adjacent, close to, or a part of the lamp assembly.

Plastic Materials—Any plastic materials used in optical parts shall comply with the requirements set forth in SAE J576.

Photometric Test—Photometric tests shall be made with the photometer at a distance of at least 10 ft from the lamp. The H-V axis shall be taken as parallel to the longitudinal axis of the vehicle.

The light from a single lamp, when used in a two-lamp system, shall meet the photometric requirements shown in Table 1.

Installation Requirements—The following requirements apply to the device as used on the vehicle and are not part of the laboratory test requirements and procedures:

1. The backup lamp shall be illuminated when the ignition switch is energized and reverse gear is engaged.

2. Backup lamps shall not be lighted when the vehicle is in forward motion.

3. Backup lamps shall be mounted on the rear so that the center of the lens of at least one lamp is visible from any eye point elevation from at least 6 ft to 2 ft above the horizontal plane on which the vehicle is standing; and from any position in the area, rearward of a vertical plane perpendicular to the longitudinal axis of the vehicle, 3 ft to the rear of the vehicle and extending 3 ft beyond each side of the vehicle.

TABLE 1—PHOTOMETRIC MINIMUM CANDLEPOWER REQUIREMENTS^{a, b, c}

Test Points	45L	30L	10L	V	10R	30R	45R
10U			10	15	10		
5U	15	—	20	25	20	—	15
H	15	25	50	80	50	25	15
5D	15	25	50	80	50	25	15

^a When only one backup lamp is used on the vehicle, it shall be tested to twice the candlepower requirements.

^b When two lamps of the same or symmetrically opposite design are used, the reading along the vertical axis and the averages of the readings for the same angles left and right of vertical for one lamp shall be used to determine compliance with the requirements. If two lamps of differing designs are used, they shall be tested individually and the values added to determine that the combined units meet twice the candlepower requirements.

^c Maximum (per lamp) 300 cp at H and above.

HEADLAMP SWITCH—SAE J253

Report of Lighting Committee approved July 1971.

1. Definition—The headlamp switch is an operator actuated device for control of various vehicle light sources. Primary function is to control headlights, park lights, tail lights, and certain marking lights. A secondary function may be one of control of various accessory and instrument lights. Circuit breaker(s) may be incorporated for circuit overload protection.

2. Temperature Test

2.1 To insure basic function, the switch shall be manually cycled for 10 cycles at design electrical load at: 75 ± 10 F (24 ± 5.5 C); 165 + 0, -5 F (74 + 0, -2.8 C); -25 + 5, -0 F (-32 + 2.8, -0 C). This to be done after a 1 h exposure at each of these temperatures. The switch shall be electrically and mechanically operable during each of these cycles.

2.2 This same switch shall be used for the endurance test described below.

3. Endurance Test Setup

3.1 The switch shall be set up to operate its design electrical load. (Both primary and secondary circuit function design electrical loads.)

3.2 The test shall be set up to operate the switches for the prescribed number of completed cycles.

One complete cycle shall consist of sequencing through each position (with dwell in each position) and return without dwell in intermediate positions to the initial position.

The test equipment shall be so arranged as to provide the following mechanical time requirements:

Travel time—0.1-0.5 s (time from one position to the next).

Dwell time—1.0-2.0 s (time in each position).

3.3 During the test the switch shall be operated at 6.4 V d-c for a 6 V system, 12.8 V d-c for a 12 V system, or 25.6 V d-c for a 24 V system.

SAE Recommended Practice

These voltages shall be measured at the input termination on the switch.

The power supply shall not generate any adverse transients not present in motor vehicles and shall comply with the following specifications:

(a) Output current—Capable of supplying the continuous current of the design electrical load and inrush current as required by the bulb load complement.

(b) Regulation—

Dynamic—The output voltage at the supply shall not deviate more than 1.0 V from zero to maximum load (including inrush current) and should recover 63% of its maximum excursion within 100 ms.

Static—The output voltage at the supply shall not deviate more than 2% with changes in static load from zero to maximum (not including inrush current), and means shall be provided to compensate for static input line voltage variations.

(c) Ripple voltage—Maximum 300 mV peak to peak.

4. Endurance Requirements

4.1 The switch shall be capable of satisfactorily operating for 25,000 complete cycles at a temperature of 75 ± 10 F (24 ± 5.5 C) followed by 1 h ON in headlamp position at 75 ± 10 F (24 ± 5.5 C).

4.2 The voltage drop from the input terminal(s) to the corresponding output terminal(s) shall be measured before and after the completion of the endurance test and shall not exceed 0.30 V (the average of three consecutive readings) at design load. These voltage drop readings should exclude the voltage drop across the circuit breaker(s). If wiring is an integral part of the switch, the voltage drop measurement shall be made including 3 in of wire on each side of the switch; otherwise, measurement to be made at switch terminals.

REFLEX REFLECTORS—SAE J594e

SAE Standard

Report of Lighting Division approved January 1931 and last revised by Lighting Committee March 1970.

Definition—Reflex reflectors, for the purpose of this specification, include only devices which are used on vehicles to give an indication to an approaching driver by reflected light from the lamps on the approaching vehicle. Reflex reflectors should be visible at night from all distances between 100 and 600 ft when illuminated by the lower beam.

Requirements

General

The following sections from SAE J575 are a part of this standard.

Section B—Samples for Test

Section D—Laboratory Facilities

Section E—Vibration Test

Section F—Moisture Test—Except that in the case of sealed units there shall be no visible moisture within the unit.

Section G—Dust Test

Section H—Corrosion Test

Section J—Photometry—The reflex reflector shall be set up for testing as shown in Fig. 1. The test distance shall be 100 ft. The source of illumination shall be a lamp with a 2 in. effective diameter and with a filament operating at 2854K color temperature. The observation point shall be located directly above the source of illumination. The reflex reflector shall be mounted on a goniometer with the center of the reflex area at the center of rotation and at the same horizontal level as the source of illumination. The H-V axis of reflex reflectors shall be taken as parallel to the longitudinal axis of the vehicle for rear reflectors and perpendicular to a vertical plane passing through the longitudinal axis of the vehicle for side reflectors.

Photometric measurements of reflex reflectors shall be made at various observation angles and entrance angles as shown in Table 1. The ob-

See Page 6

Pg. 2. (1)

Effective: September 1, 1973

MOTOR VEHICLE SAFETY STANDARD NO. 217

Bus Window Retention and Release

S1. Scope. This standard establishes requirements for the retention of windows other than windshields in buses, and establishes operating forces, opening dimensions, and markings for push-out bus windows and other emergency exits.

S2. Purpose. The purpose of this standard is to minimize the likelihood of occupants being thrown from the bus and to provide a means of readily accessible emergency egress.

S3. Application. This standard applies to buses.

S4. Definitions.

"Push-out window" means a vehicle window designed to open outward to provide for emergency egress.

"Adjacent seat" means a designated seating position located so that some portion of its occupant space is not more than 10 inches from an emergency exit, for a distance of at least 15 inches measured horizontally and parallel to the exit.

"Occupant space" means the space directly above the seat and footwell, bounded vertically by the ceiling and horizontally by the normally positioned seat back and the nearest obstruction of occupant motion in the direction the seat faces.

S5. Requirements.

S5.1 Window Retention. Except as provided in S5.1.2, each piece of window glazing and each surrounding window frame, when tested in accordance with the procedure in S5.1.1 under the conditions of S6.1 through S6.3, shall be retained by its surrounding structure in a manner that prevents the formation of any opening large enough to admit the passage of a 4-inch diameter sphere under a force, including the weight of the sphere, of 5 pounds until any one of the following events occurs:

(a) A force of 1200 pounds is reached.

(b) [At least 80% of the glazing thickness has developed cracks running from the load contact region to the periphery at two or more points, or shattering of the glazing occurs. (37 F.R. 18034—September 6, 1972. Effective: 9/1/73)]

(c) [The inner surface of the glazing at the center of force application has moved relative to the window frame, along a line perpendicular to the undisturbed inner surface, a distance equal to one-half of the square root of the minimum surface dimension measured through the center of the area of the entire sheet of window glazing. (37 F.R. 18034—September 6, 1972. Effective: 9/1/73)]

S5.1.1 An increasing force shall be applied to the window glazing through the head form specified in Figure 4, outward and perpendicular to the undisturbed inside surface at the center of the area of each sheet of window glazing, with a head form travel of 2 inches per minute.

S5.1.2 The requirements of this standard do not apply to a window whose minimum surface dimension measured through the center of its area is less than 8 inches.

S5.2 Provision of Emergency Exits. Buses other than school buses shall provide unobstructed openings for emergency exit which collectively amount, in total square inches, to at least 67 times the number of designated seating positions on the bus. At least 40 percent of the total required area of unobstructed openings, computed in the above manner, shall be provided on each side of a bus. However, in determining the total unobstructed openings provided by a bus, no emergency exit, regardless of its area, shall be credited with more than 536 square inches of the total area requirement.

S5.2.1 Buses with GVWR of more than 10,000 pounds. [Except as provided in S5.2.1.1, buses with a GVWR of more than 10,000 pounds shall

Effective: September 1, 1973

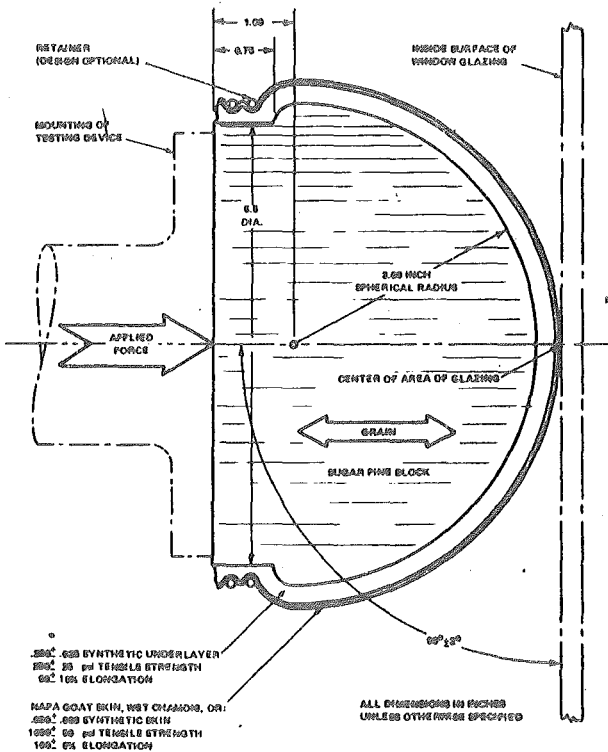


FIGURE 4 HEAD FORM

meet the unobstructed openings requirements by providing side exits and at least one rear exit that conforms to S5.3 through S5.5. The rear exit shall meet the requirements when the bus is upright and when the bus is overturned on either side, with the occupant standing facing the exit. When the bus configuration precludes installation of an accessible rear exit, a roof exit that meets the requirements of S5.3 through S5.5 when the bus is overturned on either side, with the occupant standing facing the exit, shall be provided in the rear half of the bus. (38 F.R. 6070—March 6, 1973. Effective: 9/1/73)]

[S5.2.1.1 A bus with GVWR of more than 10,000 pounds may satisfy the unobstructed openings requirement by providing at least one side door for each three passenger seating positions in the vehicle. (37 F.R. 18034—September 6, 1972. Effective: 9/1/73)]

S5.2.2 Buses with a GVWR of 10,000 pounds or less. Buses with a GVWR of 10,000 pounds or less may meet the unobstructed openings requirement by providing:

(a) Devices that meet the requirements of S5.3 through S5.5 without using remote controls or central power systems;

(b) Windows that can be opened manually to a position that provides an opening large enough to admit unobstructed passage, keeping a major axis horizontal at all times, of an ellipsoid generated by rotating about its minor axis an ellipse having a major axis of 20 inches and a minor axis of 13 inches; or

(c) Doors.

S5.2.3 School Buses. The emergency exit requirements do not apply to school buses, but if a school bus contains any push-out windows or other emergency exits, these exits shall conform to S5.3 through S5.5.

S5.3 Emergency exit release.

S5.3.1 [Each push-out window or other emergency exit shall have a release mechanism located within the regions specified in Figure 1, Figure 2, or Figure 3. The lower edge of the region in Figure 1, and Region B in Figure 2, shall be located 5 inches above the adjacent seat, or 2 inches above the armrest, if any, whichever is higher. (38 F.R. 6070—March 6, 1973. Effective: 9/1/73)]

S5.3.2 When tested under the conditions of S6, both before and after the window retention test required by S5.1, each emergency exit shall allow manual release of the exit by a single occupant using force applications each of which conforms, at the option of the manufacturer, either to (a) or (b). The release mechanism or mechanisms shall require for release one or two force applications, at least one of which differs by 90 to 180° from the direction of the initial push-out motion of the emergency exit (outward and perpendicular to the exit surface).

(a) Low-force application.

Location: As shown in Figure 1 or Figure 3.

Type of Motion: Rotary or straight.

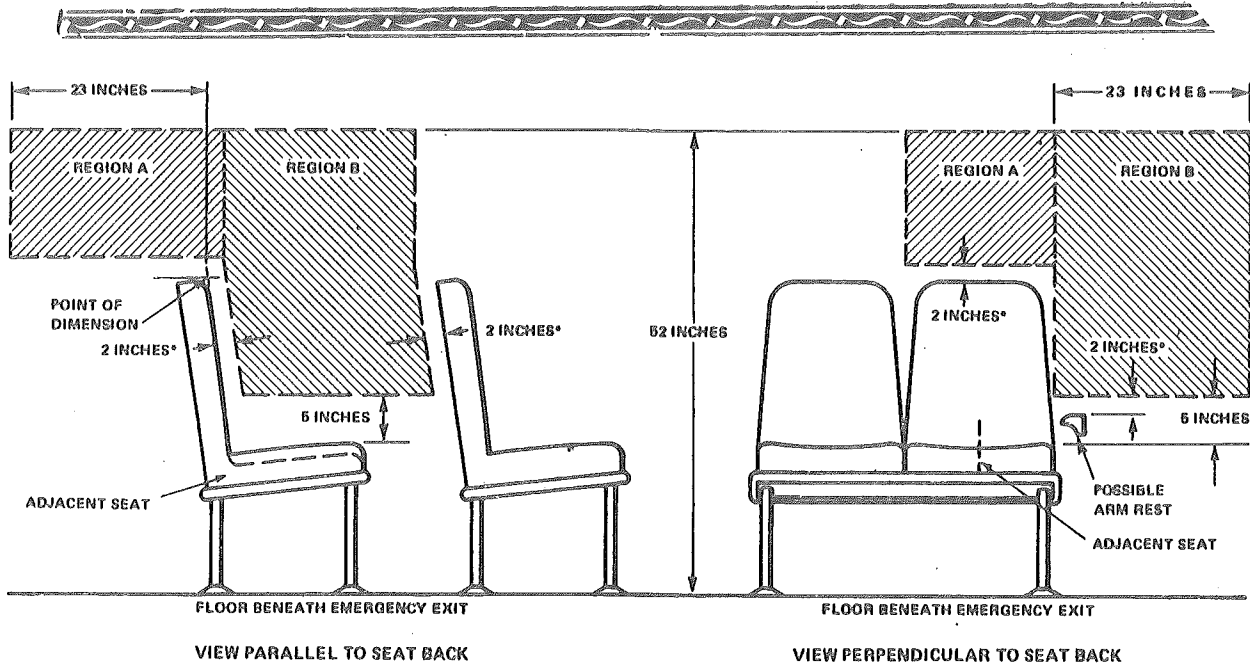
Magnitude: [Not more than 20 pounds. (38 F.R. 6070—March 6, 1973. Effective: 9/1/73)]

(b) High force application.

Location: As shown in Figure 2 or Figure 3.

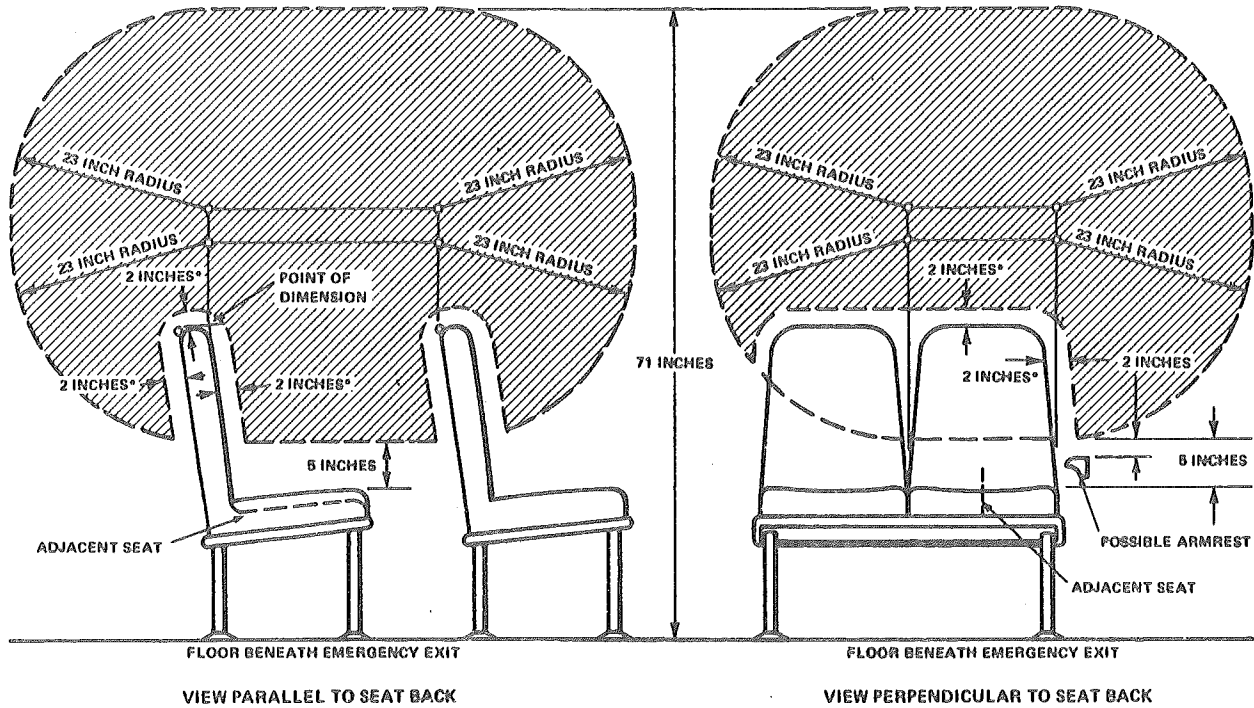
Type of Motion: Straight, perpendicular to the undisturbed exit surface.

Magnitude: Not more than 60 pounds.



*CLEARANCE AREA AROUND SEAT BACK, ARM RESTS, AND OTHER OBSTRUCTIONS

FIGURE 2 HIGH-FORCE ACCESS REGIONS FOR EMERGENCY EXITS HAVING ADJACENT SEATS

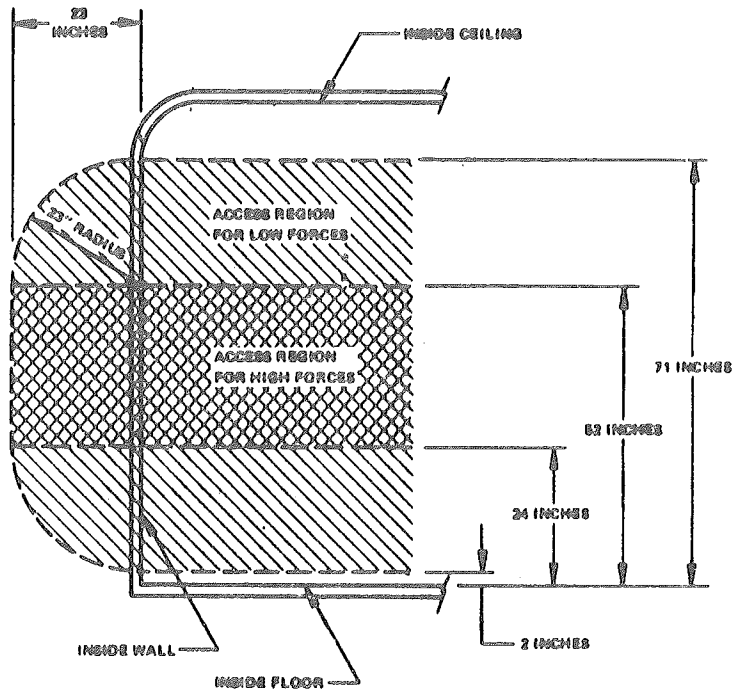


*CLEARANCE AREA AROUND SEAT BACK, ARM RESTS, AND OTHER OBSTRUCTIONS

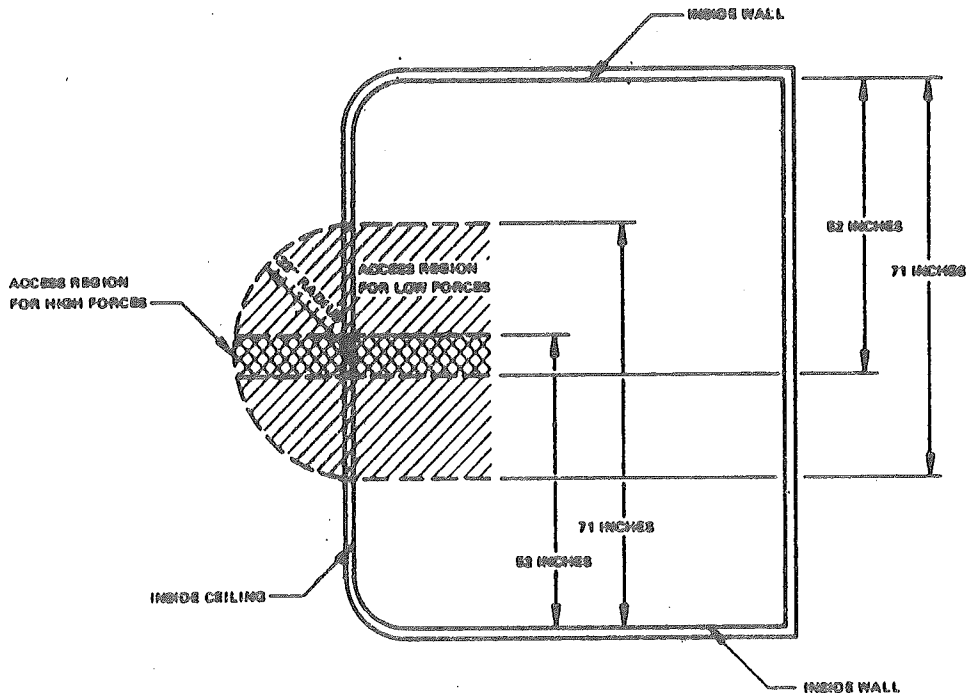
ACCESS REGION IS THE SPATIAL VOLUME CREATED BY THE INTERSECTION OF THE PROJECTIONS OF THE AREAS SHOWN IN THE TWO VIEWS.

FIGURE 1 LOW-FORCE ACCESS REGION FOR EMERGENCY EXITS HAVING ADJACENT SEATS

Effective: September 1, 1973



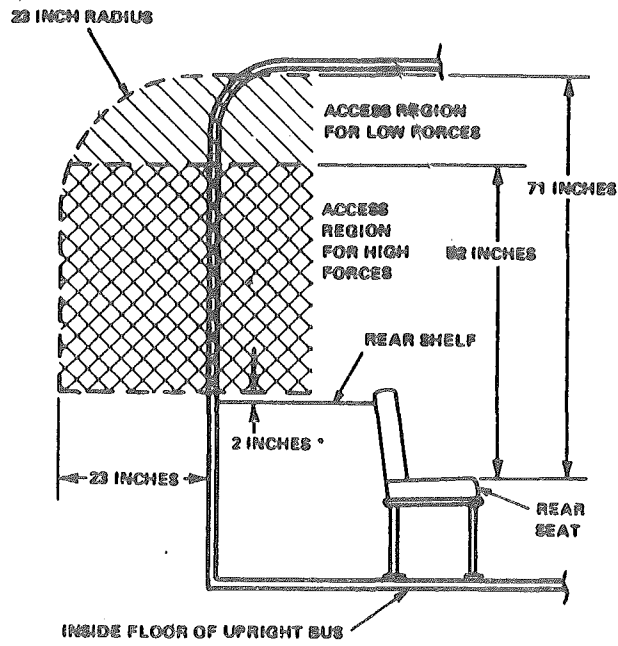
3A. SIDE EMERGENCY EXIT



3B. ROOF EMERGENCY EXIT

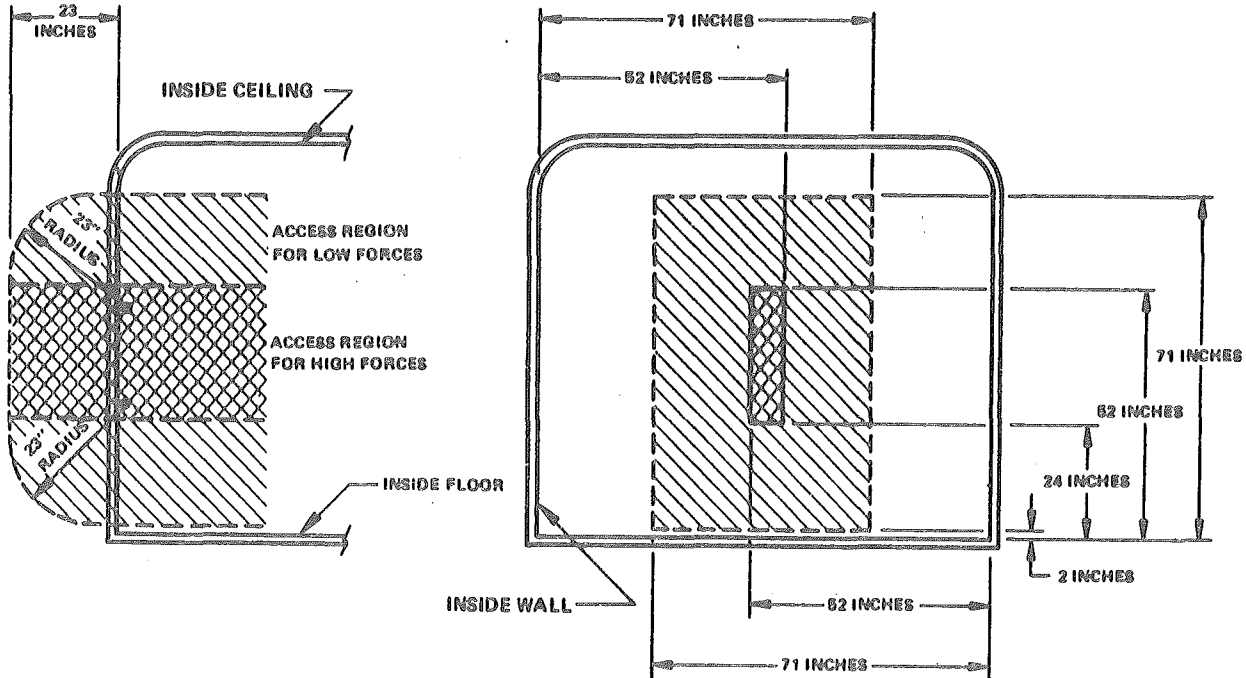
FIGURE 3—LOW AND HIGH-FORCE ACCESS REGIONS FOR EMERGENCY EXITS WITHOUT ADJACENT SEATS

Effective: September 1, 1973



*TYPICAL CLEARANCE AROUND OBSTRUCTIONS

3C. REAR EMERGENCY EXIT WITH REAR OBSTRUCTION



3D. REAR EMERGENCY EXIT WITHOUT REAR OBSTRUCTION

FIGURE 3—CONTINUED

(Rev. 2/28/73)

PART 571; S 217-5

S5.4 Emergency exit extension. Each push-out window or other emergency exit shall, after the release mechanism has been operated, under the conditions of S6, before and after the window retention test required by S5.1, using the reach distances and corresponding force levels specified in S5.3.2 be manually extendable by a single occupant to a position that provides an opening large enough to admit unobstructed passage, keeping a major axis horizontal at all times, of an ellipsoid generated by rotating about its minor axis an ellipse having a major axis of 20 inches and a minor axis of 13 inches.

S5.5 Emergency exit identification.

S5.5.1 Each push-out window or other emergency exit shall have the designation "Emergency Exit," followed by concise operating instructions, located within 6 inches of the release mechanism. When a release mechanism is not located within an occupant space of an adjacent seat, a label meeting the requirements of S5.5.2 that indicates the location of the nearest release mechanism shall be placed within that occupant space.

EXAMPLE: "EMERGENCY EXIT INSTRUCTIONS LOCATED NEXT TO SEAT AHEAD"

S5.5.2 Except as provided in S5.5.2.1, each marking shall be legible, when the only source of light is the normal night-time illumination of the bus interior, to occupants having corrected visual acuity of 20/40 (Snellen ratio) seated in the adjacent seat, seated in the seat directly ad-

joining the adjacent seat, and standing in the aisle location that is closest to that adjacent seat. The marking shall be legible from each of these locations when the other two corresponding locations are occupied.

S5.5.2.1 If the exit has no adjacent seat, the marking must meet the legibility requirements of S5.5.2 for occupants standing in the aisle location nearest to the emergency exit, except for a roof exit, which must meet the legibility requirements for occupants positioned with their backs against the floor opposite the roof exit.

S6. Test conditions.

S6.1 The vehicle is on a flat, horizontal surface.

S6.2 The inside of the vehicle and the outside environment are kept at any temperature from 70° to 85° Fahrenheit for 4 hours immediately preceding the tests, and during the tests.

S6.3 For the window retention test, windows are installed, closed, and latched (where latches are provided) in the condition intended for normal bus operation.

S6.4 For the emergency exit release and extension tests, windows are installed as in S6.3, seats, armrests, and interior objects near the windows are installed as for normal use, and seats are in the upright position.

37 F.R. 9394
May 10, 1972

§ 393.95

Title 49—Transportation

(b) *Trucks and truck tractors*—(1) *Trucks and truck tractors manufactured on or after January 1, 1965, and before July 1, 1971.* After June 30, 1972, every truck and truck tractor manufactured on or after January 1, 1965, and before July 1, 1971, must be equipped with a Type 1 or Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209¹ (§ 571.209) installed at the driver's seat and at the right front out-board seat, if the vehicle has one, and seat belt assembly anchorages that conform to the location and geometric requirements of Motor Vehicle Safety Standard No. 210¹ (§ 571.210) for each seat belt assembly that is required by this subparagraph.

(2) *Trucks and truck tractors manufactured on or after July 1, 1971.* Every truck and truck tractor manufactured on or after July 1, 1971, except a truck or truck tractor being transported in driveaway-towaway operation and having an incomplete vehicle seating and cab configuration, must conform to the requirements of Motor Vehicle Safety Standard No. 208¹ (§ 571.208) (relating to installation of seat belt assemblies) and Motor Vehicle Safety Standard No. 210¹ (§ 571.210) (relating to installation of seat belt assembly anchorages).

(3) *Trucks and truck tractors manufactured on or after January 1, 1972.* Every truck and truck tractor manufactured on or after January 1, 1972, except a truck or truck tractor being transported in driveaway-towaway operation and having an incomplete vehicle seating and cab configuration, must conform to the requirements of Motor Vehicle Safety Standard No. 207¹ (§ 571.207) (relating to seating systems).

(c) *Effective date of standards.* Whenever paragraph (a) or (b) of this section requires conformity to a Motor Vehicle Safety Standard, the vehicle or equipment must conform to the version of the Standard that is in effect on the date the vehicle is manufactured or on the date the vehicle is modified to conform to the requirements of paragraph (a) or (b) of this section, whichever is later.

[35 F.R. 18839, Oct. 30, 1970]

¹ Individual copies of Motor Vehicle Safety Standards may be obtained from the National Highway Safety Bureau's General Services Division, Room 5111C, Nassif Building, 400 Seventh Street SW., Washington, D.C. 20591.

Subpart H—Emergency Equipment

§ 393.95 Emergency equipment on all power units.

On every bus, truck, truck-tractor, and every driven vehicle in driveaway-towaway operation, there shall be:

(a) *Fire extinguisher.* (1) Except as provided in subparagraph (4) of this paragraph, every power unit must be equipped with a fire extinguisher that is properly filled and located so that it is readily accessible for use. The fire extinguisher must be securely mounted on the vehicle. The fire extinguisher must be designed, constructed, and maintained to permit visual determination of whether it is fully charged. The fire extinguisher must have an extinguishing agent that does not need protection from freezing. The fire extinguisher must not use a vaporizing liquid that gives off vapors more toxic than those produced by the substances shown as having a toxicity rating of 5 or 6 in the Underwriters' Laboratories "Classification of Comparative Life Hazard of Gases and Vapors."¹

(2) (i) Before July 1, 1971, a power unit that is used to transport hazardous materials must be equipped with a fire extinguisher having an Underwriters' Laboratories rating² of 4 B:C or more. On and after July 1, 1971, a power unit that is used to transport hazardous materials must be equipped with a fire extinguisher having an Underwriters' Laboratories rating² of 10 B:C or more.

(ii) Before January 1, 1973, a power unit that is not used to transport hazardous materials must be equipped with a fire extinguisher having an Underwriters' Laboratories rating² of 4 B:C or more. On and after January 1, 1973, a power unit that is not used to transport hazardous materials must be equipped with either—

(a) A fire extinguisher having an Underwriters' Laboratories rating² of 5 B:C or more; or

(b) Two fire extinguishers, each of which has an Underwriters' Laboratories rating² of 4 B:C or more.

(iii) Each fire extinguisher required by this subparagraph must be labeled or marked with its Underwriters' Labora-

¹ Copies of the Classification can be obtained by writing to Underwriters' Laboratories, Inc., 205 East Ohio Street, Chicago, Ill. 60611.

ories rating* and must meet the requirements of subparagraph (1) of this paragraph.

(3) For purposes of this paragraph, a power unit is used to transport hazardous materials only if the power unit or a motor vehicle towed by the power unit must be marked or placarded in accordance with § 177.823 of this title.

(4) This paragraph does not apply to the driven unit in a driveaway-towaway operation.

(b) [Reserved]

(c) *Spare fuses.* At least one spare fuse or other overload protective device, if the devices used are not of a reset type, for each kind and size used. In driveaway-towaway operations, spares located on any one of the vehicles will be deemed adequate.

(d) *Tire chains.* One set of tire chains for at least one driving wheel on each side, during the time when likely to encounter conditions requiring them, except that this requirement shall not apply to motor vehicles engaged in driveaway-towaway operations if such motor vehicles are not operated when such conditions exist.

(e) [Reserved]

(f) *Warning devices for stopped vehicles.* Except as provided in paragraph (g) of this section, one of the following combinations of warning devices:

(1) *Vehicles equipped with warning devices before January 1, 1974.* Warning devices specified below may be used until replacements are necessary:

(i) Three liquid-burning emergency flares which satisfy the requirements of SAE Standard J597, "Liquid Burning Emergency Flares," and three fusees and two red flags; or

(ii) Three electric emergency lanterns which satisfy the requirements of SAE Standard J596, "Electric Emergency Lanterns," and two red flags; or

(iii) Three red emergency reflectors which satisfy the requirements of paragraph (1) of this section, and two red flags; or

(iv) Three red emergency reflective triangles which satisfy the requirements of paragraph (h) of this section; or

* Underwriters' Laboratories ratings are given to fire extinguishers under the standards of Underwriters' Laboratories, Inc., 205 East Ohio Street, Chicago, Ill. 60611. Extinguishers must conform to the standards in effect on the date of manufacture or on Jan. 1, 1969, whichever is earlier.

(v) Three bidirectional emergency reflective triangles that conform to the requirements of Motor Vehicle Safety Standard No. 125, § 571.125 of this title.

(2) *Vehicles equipped with warning devices on and after January 1, 1974.*

(1) Three bidirectional emergency reflective triangles that conform to the requirements of Motor Vehicle Safety Standard No. 125, § 571.125 of this title.

(ii) Fusees, liquid-burning emergency flares, and red electric lanterns that conform to subparagraph (1) of this paragraph may be used to supplement the emergency reflective triangles required in subdivision (i) of this subparagraph.

(g) *Flame producing devices prohibited on certain vehicles.* Liquid burning emergency flares, fusees, oil lanterns, or any signal produced by a flame shall not be carried on any motor vehicle transporting explosives, Class A or Class B; any cargo tank motor vehicle used for the transportation of flammable liquids or flammable compressed gas whether loaded or empty; or any motor vehicle using compressed gas as a motor fuel.

(h) *Requirements for emergency reflective triangles manufactured before January 1, 1974.* (1) Each reflector shall be a collapsible equilateral triangle, with legs not less than 17 inches long and not less than 2 inches wide. The front and back of the exposed leg surfaces shall be covered with red reflective material not less than one half inch in width. The reflective surface, front and back, shall be approximately parallel. When placed in position, one point of the triangle shall be upward. The area within the sides of the triangle shall be open.

(2) Reflective material: The reflecting material covering the leg of the equilateral triangle shall comply either with:

(i) The requirements for reflex-reflector elements made of red methylmethacrylate plastic material, meeting the color, sealing, minimum candlepower, wind test, vibration test, and corrosion resistance test of section 3 and 4 of Federal Specification RR-R-1185, dated November 17, 1966, or

(ii) The requirements for red reflective sheeting of Federal Specification L-S-300, dated September 7, 1965, except that the aggregate candlepower of the assembled triangle, in one direction, shall be not less than eight when measured at 0.2° divergence angle and -4° incidence angle, and not less than 80 percent of the candlepower specified for 1 square foot of material at all other angles

shown in Table II, Reflective Intensity Values, of L-S-300.

(3) **Reflective surfaces alignment:** Every reflective triangle shall be so constructed that, when the triangle is properly placed, the reflective surfaces shall be in a plane perpendicular to the plane of the roadway surface with a permissible tolerance of $\pm 10^\circ$. Reflective triangles which are collapsible shall be provided with means for holding the reflective surfaces within the required tolerance. Such holding means shall be readily capable of adjustment without the use of tools or special equipment.

(4) **Reflectors mechanical adequacy:** Every reflective triangle shall be of such weight and dimensions as to remain stationary when subjected to a 40 mile per hour wind when properly placed on any clean, dry paved road surface. The reflective triangle shall be so constructed as to withstand reasonable shocks without breakage.

(5) **Reflectors, incorporation in holding device:** Each set of reflective triangles shall be adequately protected by enclosure in a box, rack, or other adequate container specially designed and constructed so that the reflectors may be readily extracted for use.

(6) **Certification:** Every red emergency reflective triangle designed and constructed to comply with these requirements shall be plainly marked with the certification of the manufacturer that it complies therewith.

(1) **Requirements for red emergency reflectors.** Each red emergency reflector shall conform in all respects to the following requirements:

(1) **Reflecting elements required.** Each reflector shall be composed of at least two reflecting elements or surfaces on each side, front and back. The reflecting elements, front and back, shall be approximately parallel.

(2) **Reflecting elements to be Class A** Each reflecting element or surface shall meet the requirement for a red Class A reflector contained in the SAE Recommended Practice¹ "Reflex Reflectors." The aggregate candlepower output of all the reflecting elements or surface in one direction shall not be less than 12 when tested in a perpendicular position with observation at one-third degree as speci-

fied in the Photometric Test contained in the above-mentioned Recommended Practice.

(3) **Reflecting surfaces, protection.** If the reflector or the reflecting elements are so designed or constructed that the reflecting surfaces would be adversely affected by dust, soot, or other foreign matter or contacts with other parts of the reflector or its container, then such reflecting surfaces shall be adequately sealed within the body of the reflector.

(4) **Reflecting surfaces to be perpendicular.** Every reflector shall be so constructed that, when the reflector is properly placed, every reflecting element or surface is in a plane perpendicular to the plane of the roadway surface. Reflectors which are collapsible shall be provided with means for locking the reflector elements or surfaces in the required position; such locking means shall be readily capable of adjustment without the use of tools or special equipment.

(5) **Reflectors, mechanical adequacy.** Every reflector shall be of such weight and dimensions as to remain stationary when subjected to a 40 mile per hour wind when properly placed on any clean, dry, paved road surface. The reflector shall be so constructed as to withstand reasonable shocks without breakage.

(6) **Reflectors, incorporation on holding device.** Each set of reflectors and the reflecting elements or surfaces incorporated therein shall be adequately protected by enclosure in a box, rack, or other adequate container specially designed and constructed so that the reflectors may be readily extracted for use.

(7) **Certification.** Every red emergency reflector designed and constructed to comply with these requirements shall be plainly marked with the certification of the manufacturer that it complies therewith.

(j) **Requirements for fuses.** Each fusee shall be adequate, reliable, capable of burning for at least 15 minutes and shall comply with the specifications of the Bureau of Explosives, Two Pennsylvania Plaza, New York, N.Y. 10001, dated February 1969. Each fusee shall be marked to show that it complies with the specifications of the Bureau of Explosives.

(k) **Requirements for red flags.** Red flags shall be not less than 12 inches

¹ See footnote 1 to § 393.24(c).

square, with standards adequate to maintain the flags in an upright position.

(18 U.S.C. 834, sec. 6, Department of Transportation Act, 49 U.S.C. 1655, and the delegations of authority in 49 CFR 1.48 and 389.4) [33 F.R. 19735, Dec. 25, 1968, as amended by 35 F.R. 13019, Aug. 15, 1970; 35 F.R. 14019, Sept. 18, 1970; 37 F.R. 17170, Aug. 25, 1972]

§ 393.96 Buses, additional emergency equipment.

On every bus, except buses engaged in driveway-towaway operations there shall be:

(a) All items required by § 393.95, and in addition,

(b) [Reserved]

(c) One first-aid kit complying with the following requirements:

(1) *Size of kit.* The kit shall be of heavy duty 10-unit type or larger, or have contents at least equivalent in quality and number to the contents of such a kit.

(2) *Material for case and cover.* The case and the cover shall be substantially constructed of sheet steel, wood, fiber, or other durable material. If made of sheet steel, the case and cover shall be of metal at least number 24 U.S. Gage (nominal).

(3) *Tightness of case.* The case and cover shall be so constructed, including corners, covers, and closure means, that it shall be reasonably dust and weather proof when the cover is in the closed position, or the kit shall be mounted in a protected location within the passenger compartment of the motor vehicle so as to be reasonably dust and weather proof.

(4) *Opening and stop for cover.* If made of sheet steel or other metals, the case shall be so designed and constructed that the cover will be capable of being easily opened to an angle of 90° to 100° with the case and a substantial stop shall be provided at the angle of full opening; such stop shall not interfere with the smooth operation of the cover.

(5) *Method of hinging cover.* If made of metal, the cover shall be attached to the case by, at least, two substantial hinges or by a continuous plano-type hinge. If nonmetallic, the cover shall be attached by either a sliding or a hinged joint; if hinged, it shall be as prescribed for metallic construction.

(6) *Size of case.* The dimensions of the case shall be such as to permit the

contents to be easily extracted and yet maintain the contents in a relatively fixed position.

(7) *Contents of kit.* The kit shall contain at least the contents specified, in not less than the quantities shown, in either of the two following types of kits:

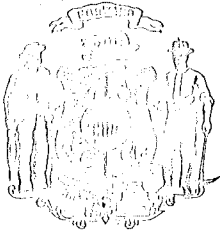
A—UNIT TYPE KIT

4-inch bandage compress.....	1 package.
2-inch bandage compress.....	1 package.
1-inch adhesive compress.....	2 packages.
40-inch triangular bandage with two safety pins.....	1 package.
Burn ointment.....	1 package.
Iodine applicator or applicator of other antiseptic solutions of, at least, equivalent bacteriological properties.....	1 package.
Wire or wood splint.....	1 package.
Tourniquet.....	1 package.

B—COMMERCIAL TYPE KIT

3-inch by 3-inch sterile gauze pads.....	Package of 12.
Gauze bandages, as follows (each package opened to be replaced by unopened package):	
1-inch by 10 yards.....	3 packages.
2-inch by 10 yards.....	2 packages.
3-inch by 10 yards.....	1 package.
¾-inch adhesive compress.....	Package of 24.
1-inch by 2½ yards adhesive tape.....	1 roll.
40-inch triangular bandage with two safety pins.....	1 package.
Burn ointment.....	1-ounce tube.
Iodine applicator or applicator of other antiseptic solution of, at least, equivalent bacteriological properties.....	1 package.
Wire or wood splint.....	1 package.
Tourniquet.....	1 package.
Scissors.....	1.

Each kit shall be provided with instructions for the use of the contents. The contents of the kits, whether required by Parts 390-397 of this subchapter or in addition thereto, either in number or kind, shall conform either to the requirements contained in Federal Specification GG-K-391(a) (Oct. 19, 1954), as amended March 3, 1959, or the standards as found in the Fifteenth Revision of the Pharmacopoeia of the United States and Supplement No. 2 thereof dated September 1, 1958, except that the 40-inch triangular bandage in the commercial type kit may be non-sterile and not compressed in the required manner if



The State of Wisconsin
Department of Justice
Madison
53702

ROBERT W. WARREN
ATTORNEY GENERAL
DAVID C. MEBANE
DEPUTY ATTORNEY GENERAL

August 8, 1973

Mr. James O. Peterson, Administrator
Division of Motor Vehicles
Department of Transportation
4802 Sheboygan Avenue
Madison, Wisconsin 53702

Dear Mr. Peterson:

You have requested our consent pursuant to sec. 227.025, Stats., for the Division of Motor Vehicles to adopt Wis. Adm. Code Chapter MVD 17, by incorporating by reference in the proposed rules numerous standards of technical societies and organizations of recognized national standing.

The names of the technical societies and governmental agencies and their specific publications are indicated in your letter of June 25, 1973. These materials are considered and utilized essentially by people dealing in the field of motor vehicle manufacture and, therefore, meet the statutory test of "limited public interest." Copies of these books, pamphlets, bulletins or publications as listed in your letter are readily available and are on file in the offices of the Division of Motor Vehicles, Secretary of State, and Revisor of Statutes. The Division of Motor Vehicles has found these listed organizations to be technical societies or other organizations of recognized national standing.

If there are any secondary references by incorporation, other than scientific or objective standards, within these reference publications, such incorporated substantive references or materials must specifically be deleted. If they are essential or necessary, they must be promulgated as a specific rule as required by ch. 227, Stats.

Because these standards adopted by reference are subject to revision or amendment beyond your control, your adoption of them is valid only in their present form, and does not include future amendments.

It appears that your proposed rule is of limited public interest, that such incorporation by reference will avoid unwarranted expense, that the reference materials are publications of technical societies and organizations of recognized national standing,